

Part 4 of Volume XXIV:

## **Delaware and Hudson Canal Company**

### **The Birth and First Maturity of Industrial America**



*D&H No. 7, E. A. Quintard, parked at Union Station, Carbondale.* Photo in the Jim and Maureen Clift collection, Keens, PA, that was presented to the Carbondale D&H Transportation Museum by Hank Loftus, on October 23, 2014. Jim Clift is the grandson of William R. Clift, who worked for the D&H, and who is seen in this photograph on the far right.

By

**S. Robert Powell, Ph.D.**

October 9, 2018

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Carbondale, PA 18407

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2407  
"... when men and mountains meet...."

The British poet William Blake (1757-1827), in his *Miscellaneous Epigrams and Fragments*, said: "Great things are done when Men & Mountains meet; This is not done by Jostling in the Street."

A brilliant manifestation of the validity of that statement by William Blake is the Delaware and Hudson Canal Company's Gravity Railroad from Carbondale to Honesdale.

The Moosic Mountain, east of Carbondale, was, at first glance by the pioneer settlers and entrepreneurs who came into the Lackawanna Valley in the early years of the nineteenth century, an obstacle between one of the richest anthracite deposits in North America and the potential market for that coal.

Thanks to the engineering expertise of D&H entrepreneurs, in response to that potential liability, the force of gravity was harnessed, and the Moosic Mountain became a priceless asset that provided the motive power that made it possible to transport millions of tons of anthracite coal from the Lackawanna Valley to the D&H Canal at Honesdale, and then down the D&H Canal to the Hudson River.

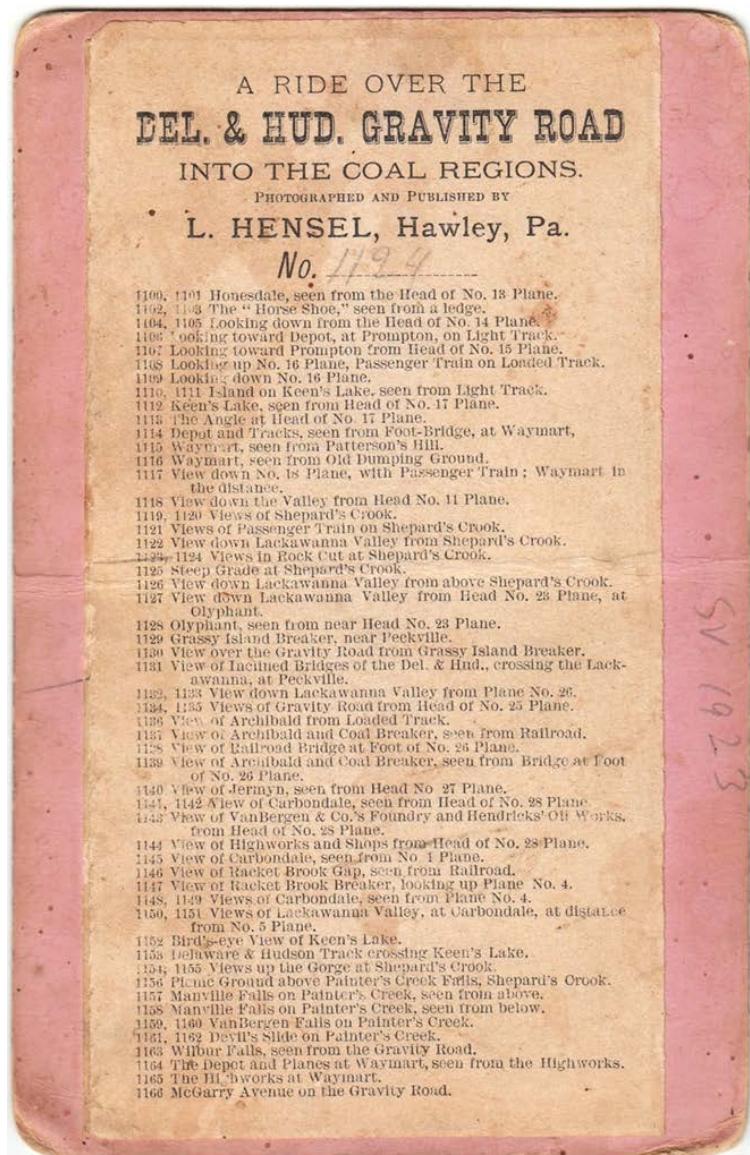
The President, Managers and the Company of The Delaware and Hudson Canal Company, a body of enlightened men met, in the third decade of the nineteenth century, a mountain, and industrial America was born. It's a compelling story, and one, in the telling of which, we have given our best in the twenty-four volumes in this series.

## In the Caboose

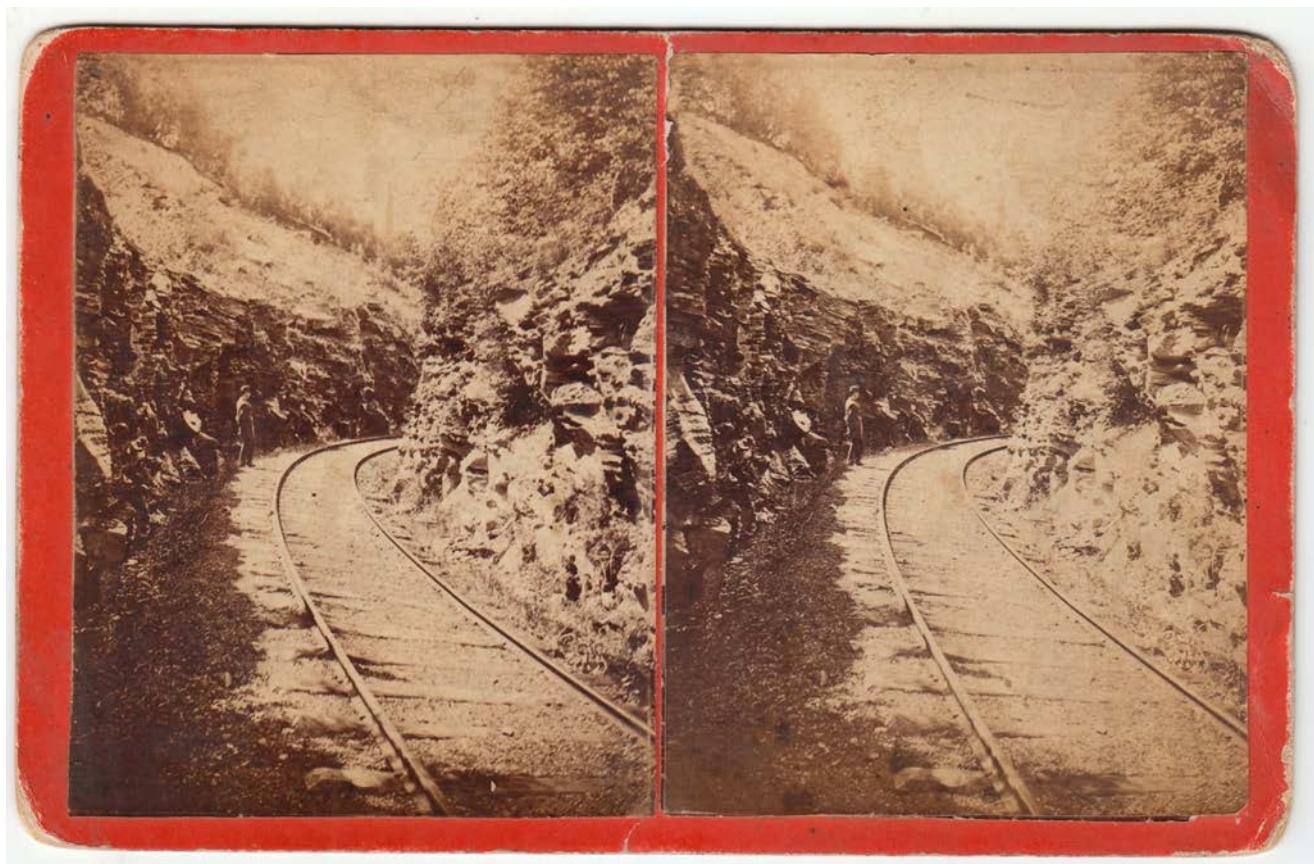
### Additions for Volume III:

1. On August 10, 2017, three Hensel stereocard views of the Gravity Railroad were offered for sale on E-Bay. Here are those three cards (front and back):

Back of Hensel No. 1124:



Front of Hensel No. 1124:



A RIDE OVER THE  
**DEL. & HUD. GRAVITY ROAD**  
INTO THE COAL REGIONS.

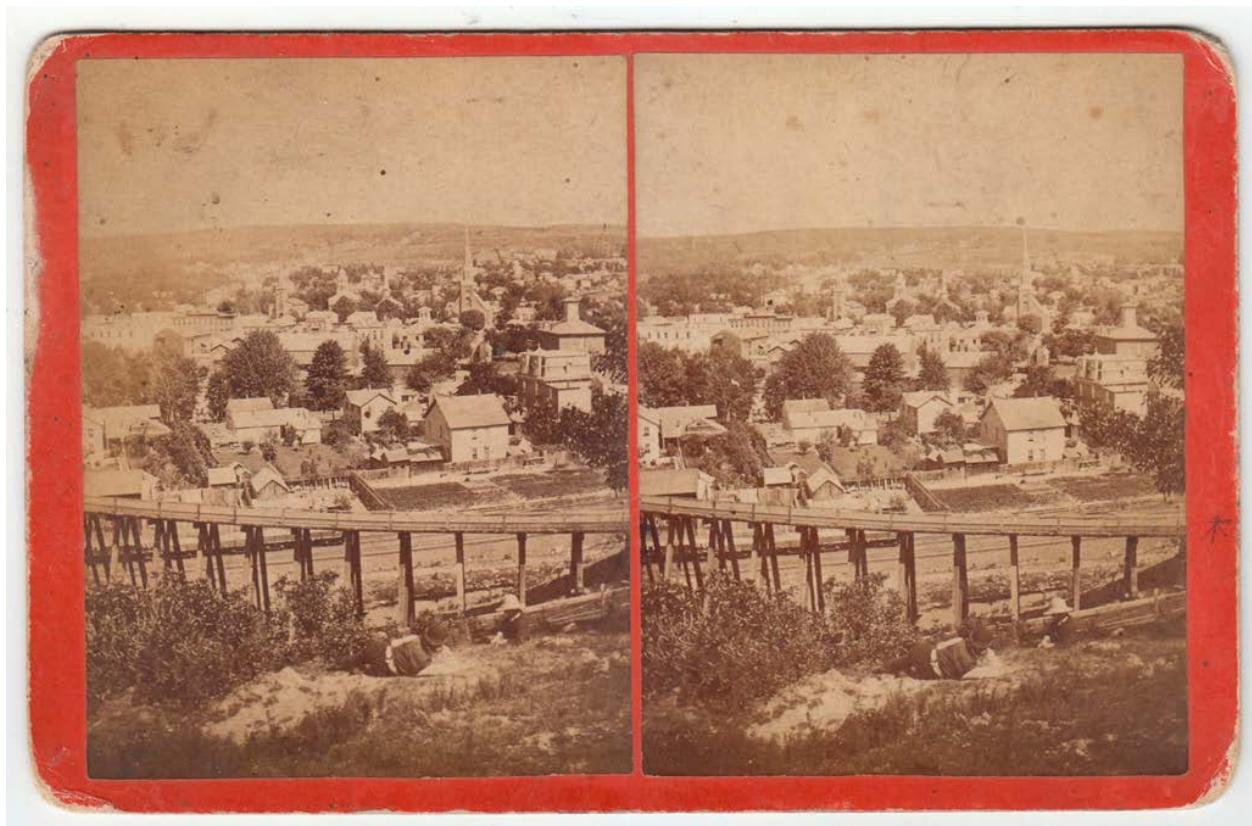
PHOTOGRAPHED AND PUBLISHED BY

**L. HENSEL, Hawley, Pa.**

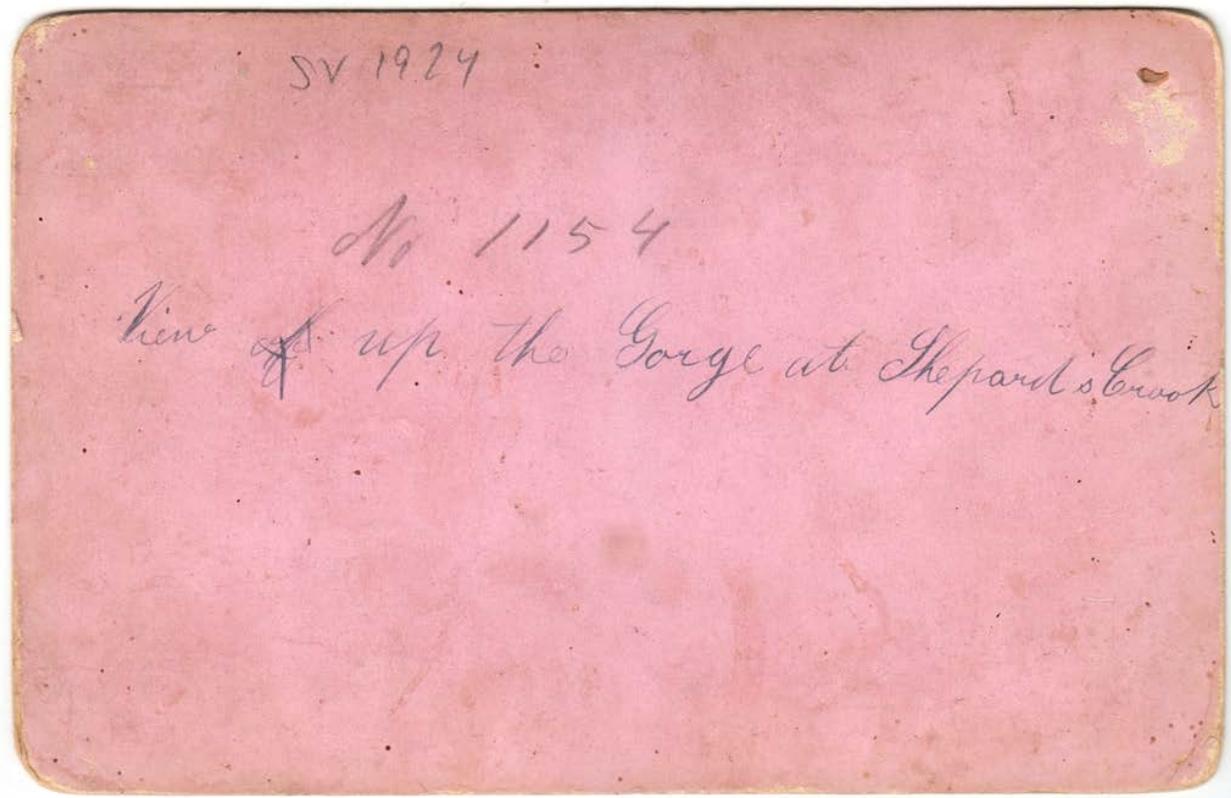
No. 1141

1100, 1101 Honesdale, seen from the Head of No. 13 Plane.  
1102, 1103 The "Horse Shoe," seen from a ledge.  
1104, 1105 Looking down from the Head of No. 14 Plane.  
1106 Looking toward Depot, at Prompton, on Light Track.  
1107 Looking toward Prompton from Head of No. 15 Plane.  
1108 Looking up No. 16 Plane, Passenger Train on Loaded Track.  
1109 Looking down No. 16 Plane.  
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1113 The Angle at Head of No. 17 Plane.  
1114 Depot and Tracks, seen from Foot-Bridge, at Waymart.  
1115 Waymart, seen from Patterson's Hill.  
1116 Waymart, seen from Old Dumping Ground.  
1117 View down No. 18 Plane, with Passenger Train; Waymart in the distance.  
1118 View down the Valley from Head No. 11 Plane.  
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1121 Views of Passenger Train on Shepard's Crook.  
1122 View down Lackawanna Valley from Shepard's Crook.  
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1165 The Highworks at Waymart.  
1166 McGarry Avenue, on the Gravity Road.

Front of Hensel No. 1141:



Back of Hensel No. 1154:



Front of Hensel No. 1154:



2. The steam whistle at Davis' Engine and at the D&H Machine Shop Bell were part of Carbondale fire alarm system in 1872. In the *Carbondale Advance* of February 3, 1872, p. 3, we read:

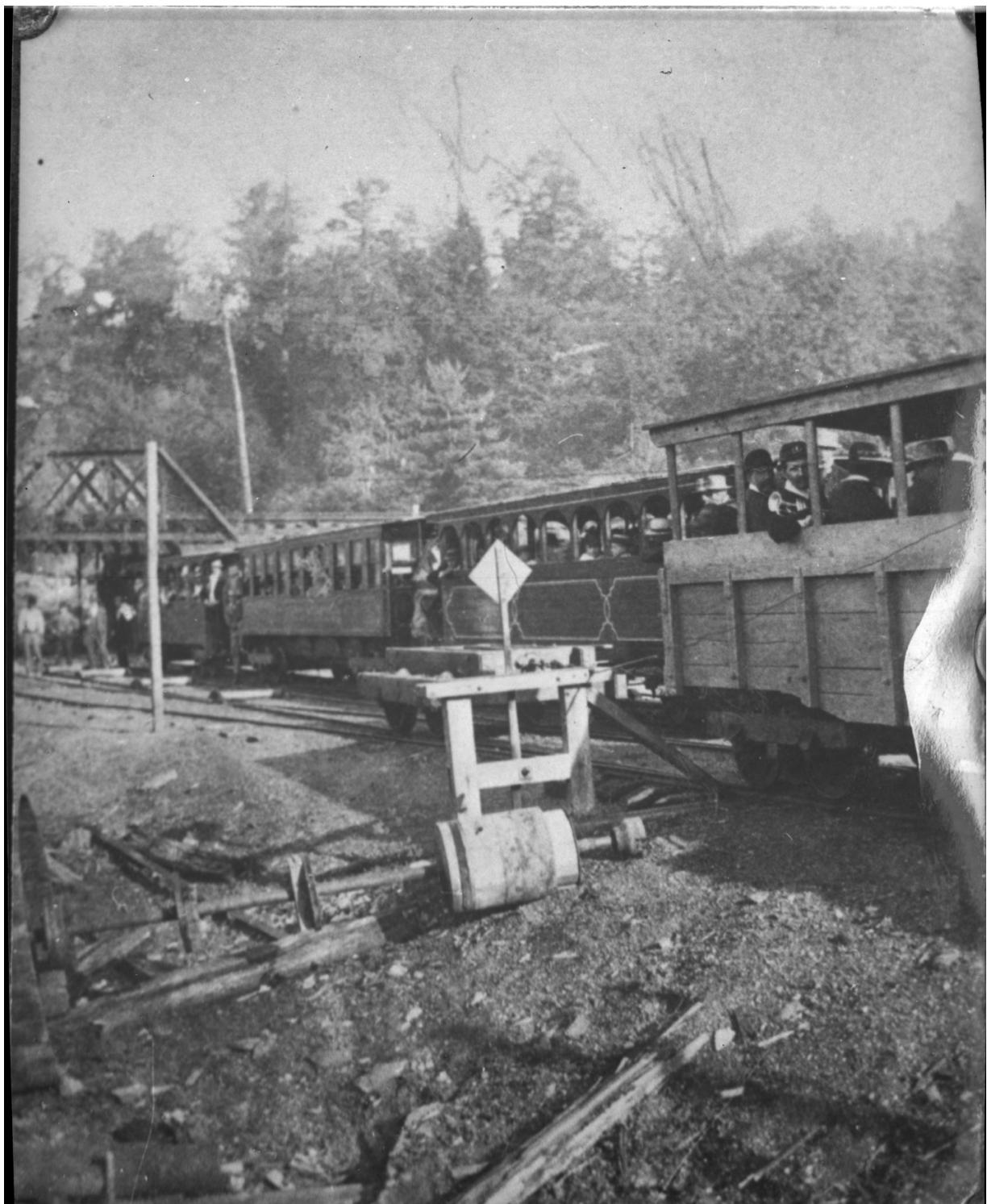
**“Fire on Sunday evening.** / On Sunday evening last, soon after ten o'clock, the now unusual alarm of Fire was sounded in our streets, and was soon vigorously taken up by the Steam Whistle at Davis Engine, and the Machine Shop Bell. People rushed into the street, and were astonished to find the Machine Shop portion of J. Benjamin & Co., Foundry Establishment already in flames. It was extremely combustible and burned with astonishing rapidity and vigor. But it was surrounded by Water Hydrants, both on the firm's own premises, and in the streets. Columbia Fire Co. was promptly on hand with the City Hose and this, and J. Benjamin & Co.'s own Hose, and that of the Del. & Hud. C. Co., were soon attached to contiguous Hydrants. It was a giant fire that seemed capable of sweeping everything before it, but it had to yield. It was surrounded and hemmed in by its invincible foes, its energie sapped, its power subdued, and it was soon literally drowned to death. . . J. Benjamin & Co.'s Foundry stands to-day a monument of the wonderful efficiency and signal usefulness of our Crystal Lake Water Co.—of our Street Hydrants—and of Columbia Fire Co. . .” (*Carbondale Advance*, February 3, 1872, p. 3)

**Additions for Volume IV:**

1. Given below are 18 Pennsylvania Coal Company Gravity Railroad photographs that have been printed from negatives that belonged to Dr. Edward Steers. These negatives were purchased by Sal Mecca, Dunmore, at the “Steers Auction.” The author borrowed those negatives from Sal Mecca in 2017 and had them scanned electronically by Ken Atkinson. Using those scanned negatives, the author has produced the copies of those photographs shown below:

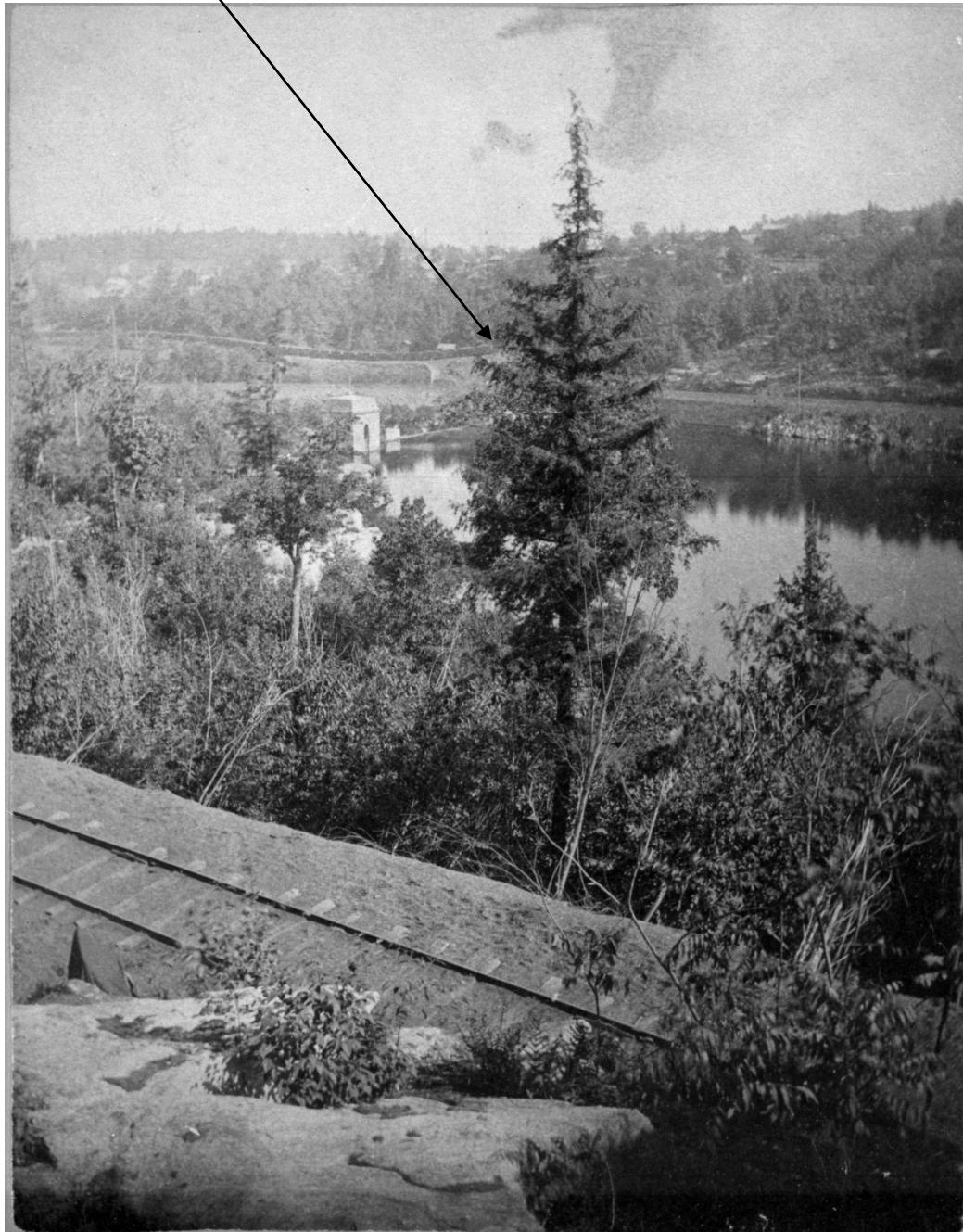


*No. 7 Plane (plane with a curve in it)*

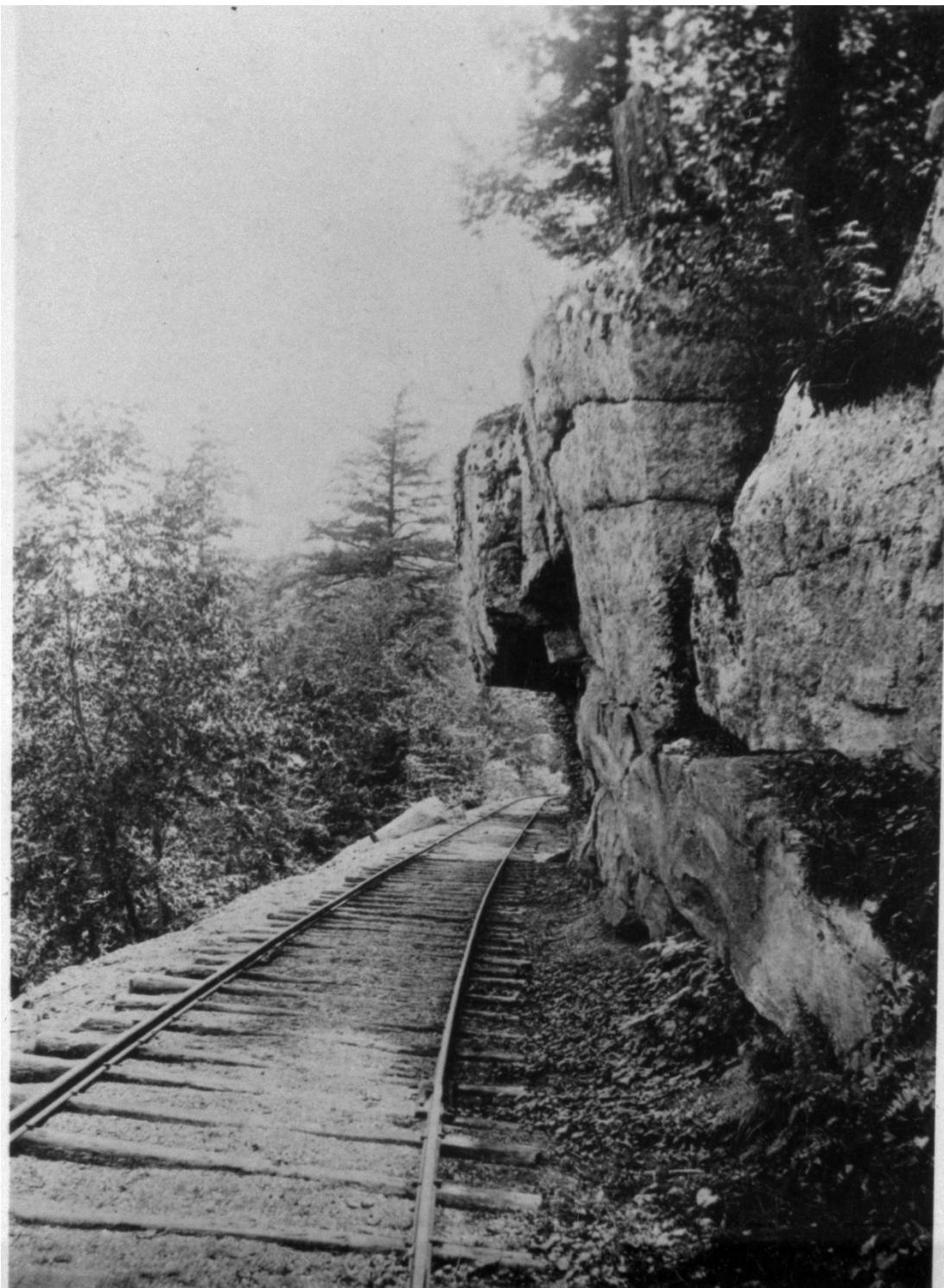


*Dunmore Coronet Band on the Way Up to Lake Ariel Amusement Park*

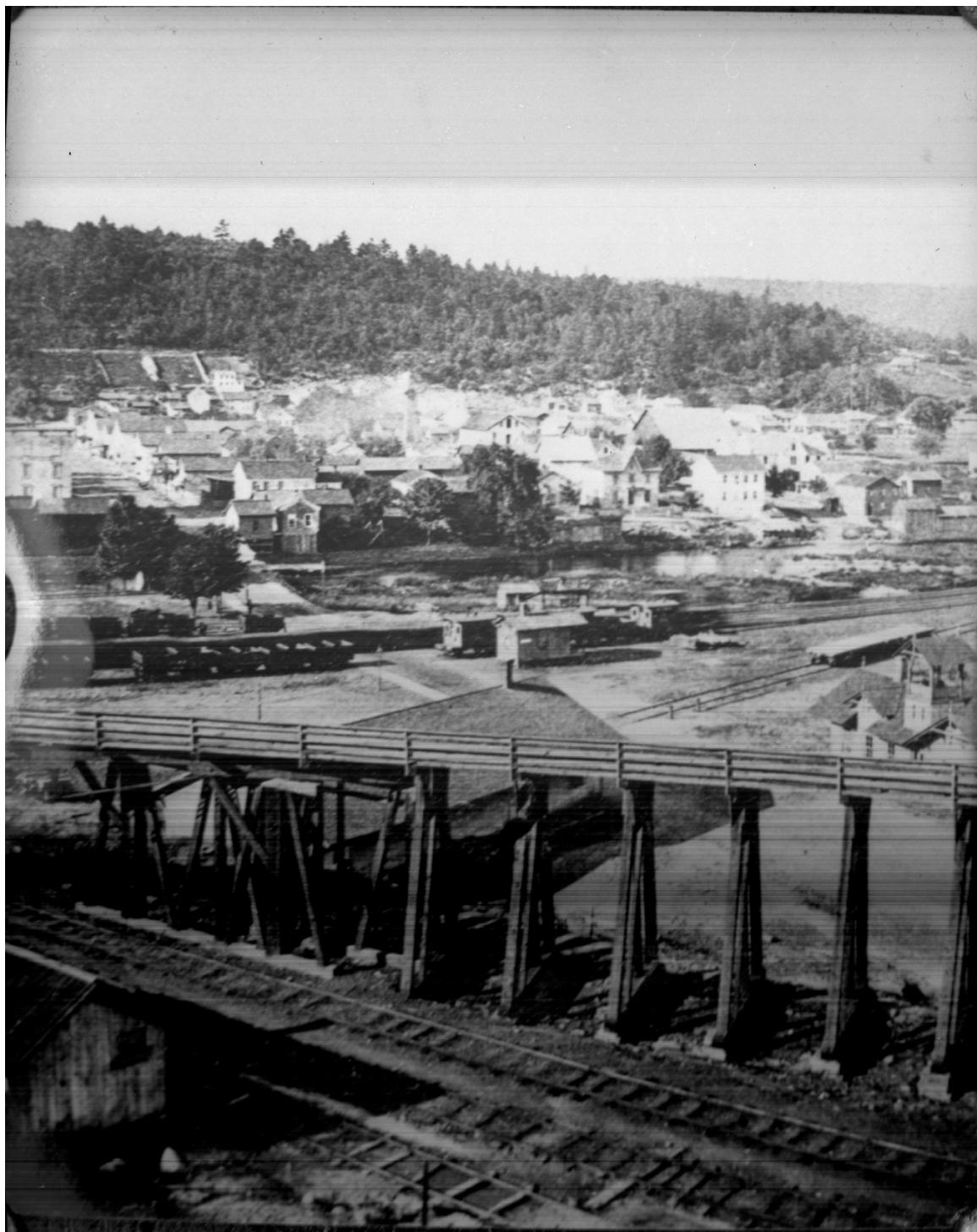
Foot of Plane No. 7



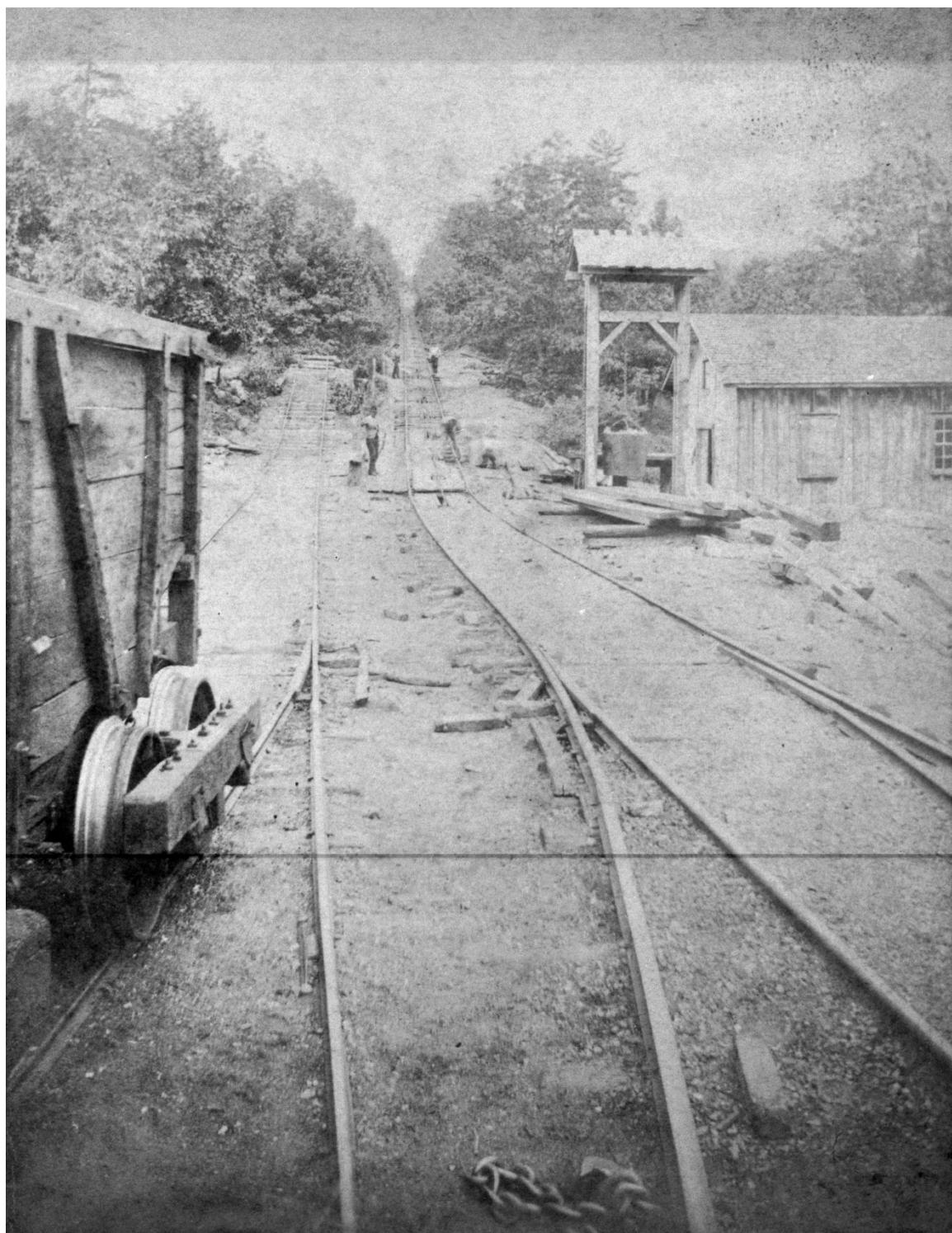
*Foot of Plane No. 7*



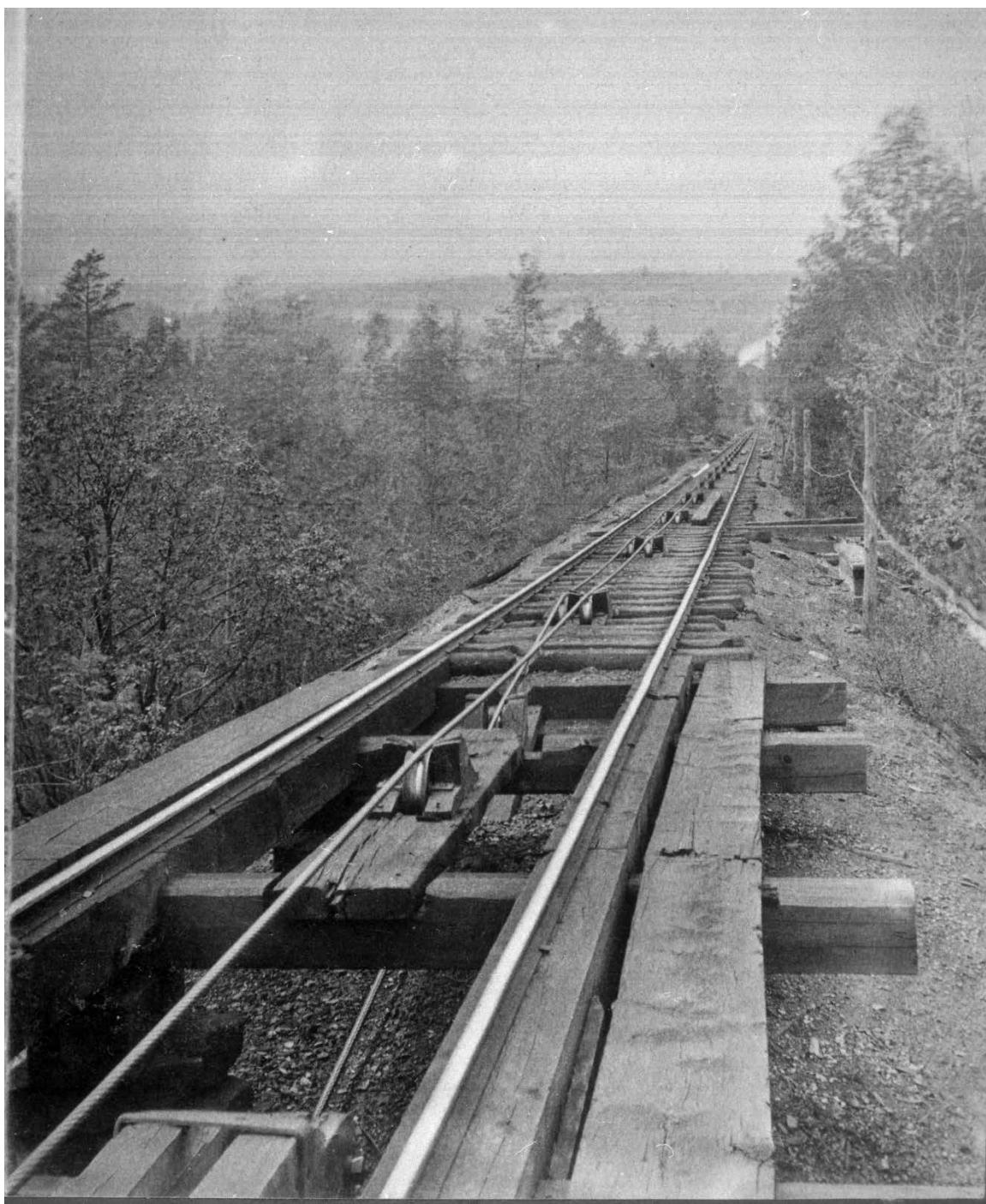
*The Hanging Rock on Level No. 21*



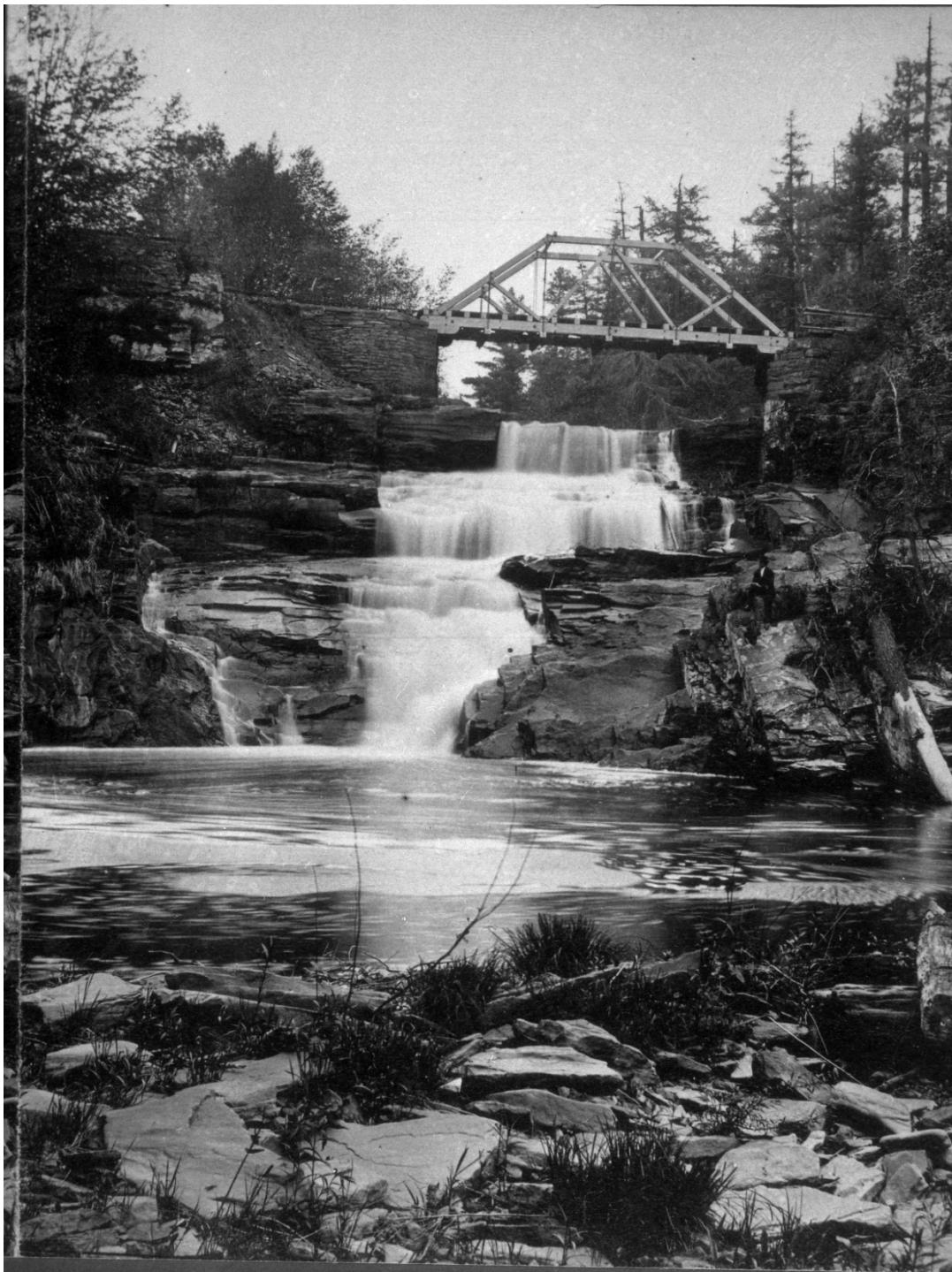
*High Works, Hawley*



*Juncture at the Foot of No. 8, where Level No. 7 and No. 2 Gypsy Grove Merged*



*Looking Down Plane No. 8*



48. *Middle Creek Falls*

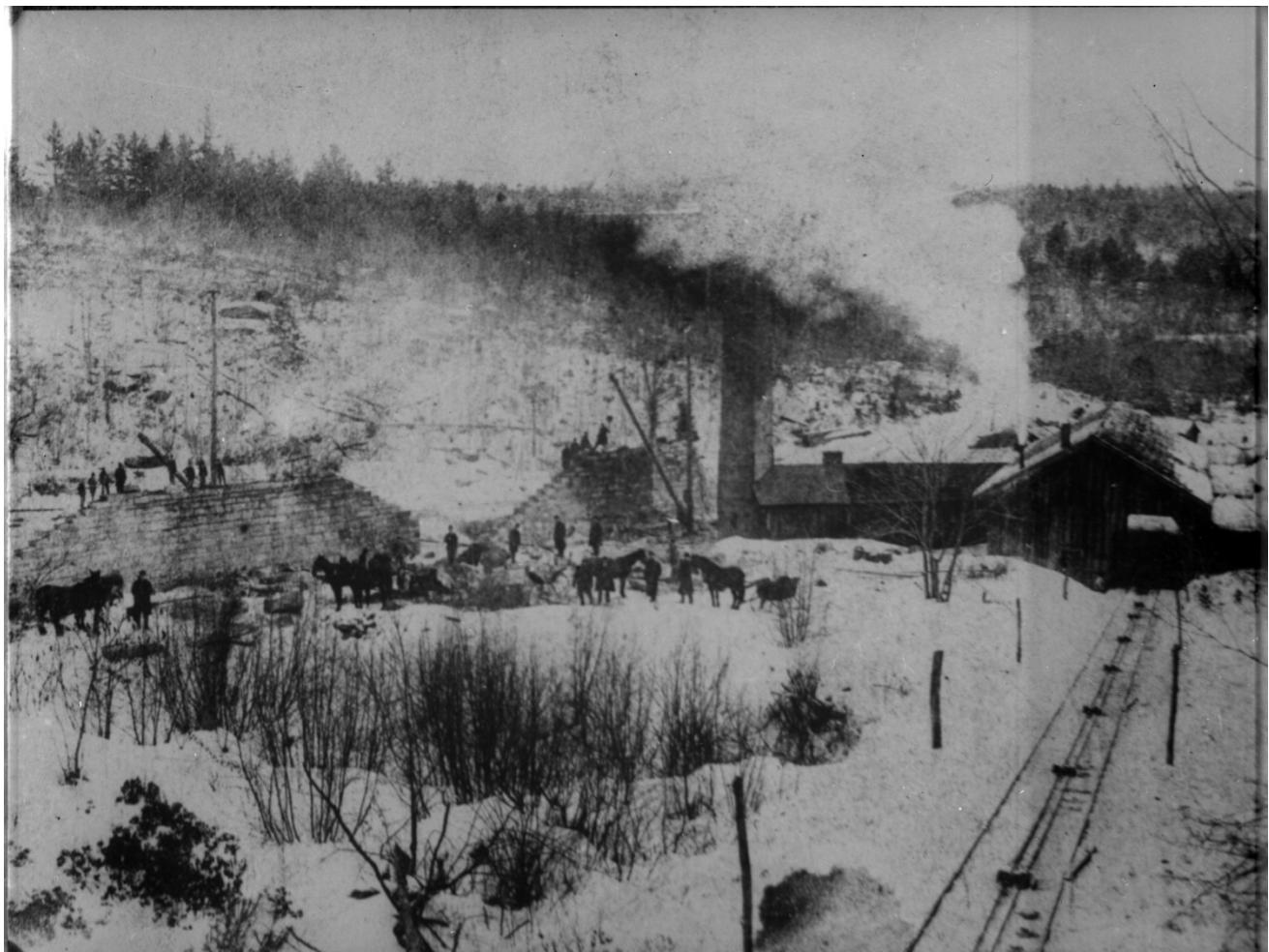
*Middle Creek Falls at Wangum Road*



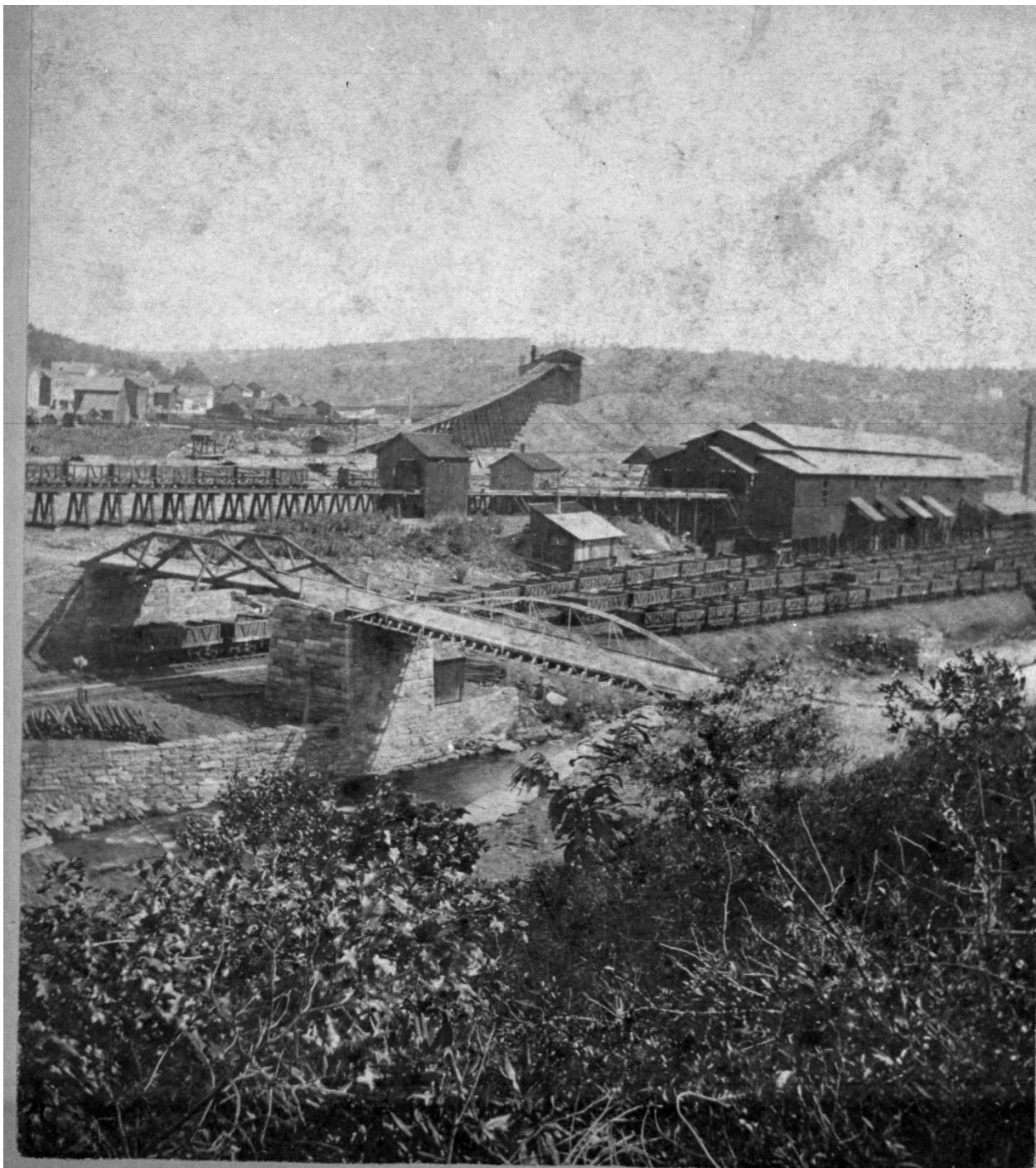
*Cut of Loaded Coal Cars on Level 12 (Wangum Road) at Middle Creek Falls*



*Plane No. 7*



*Foot of Plane No. 14*

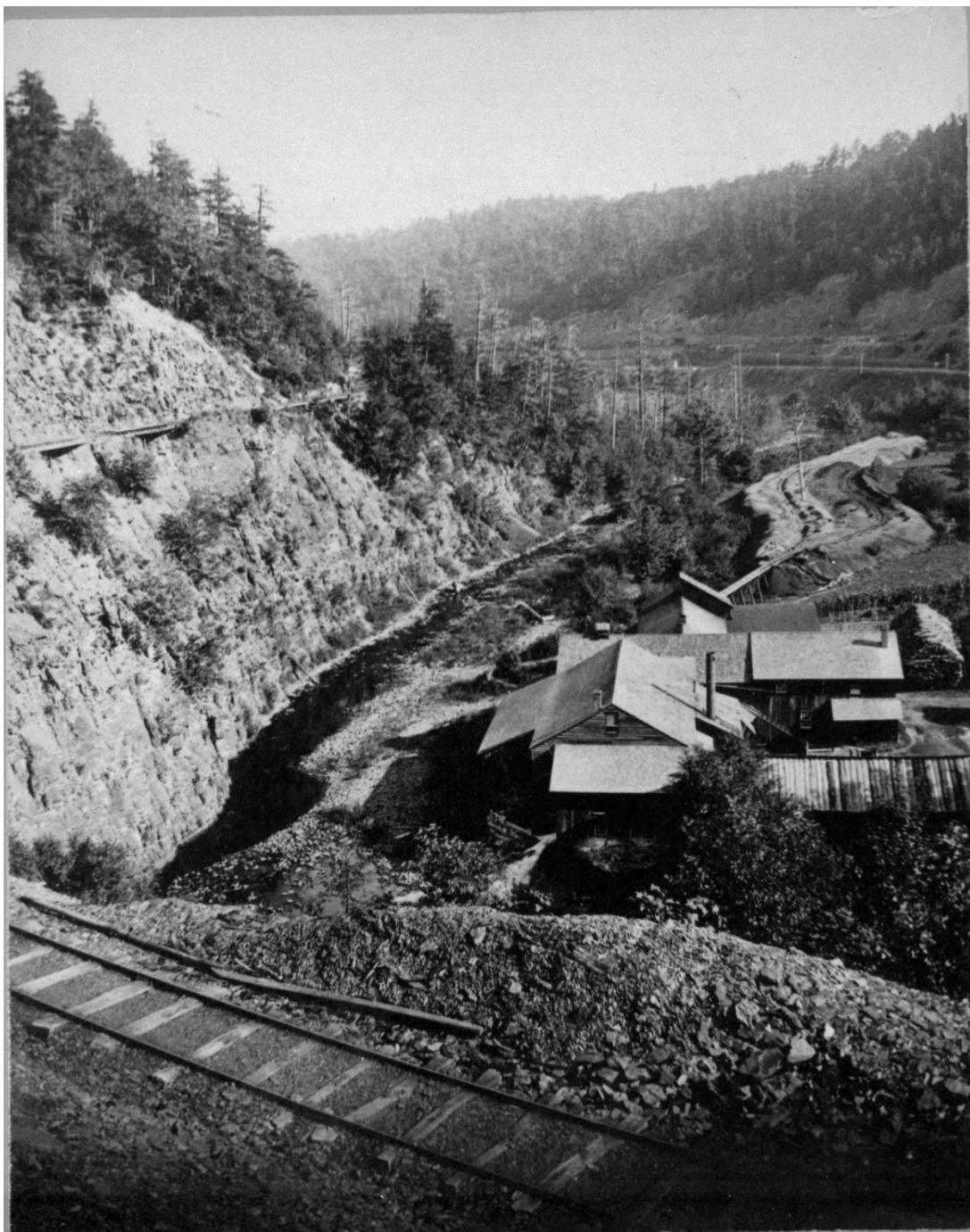


*Hawley: Coal Being Transferred from PCC Cars to Erie Cars*



Pa. Gravity's Loaded  
Middle Creek Falls

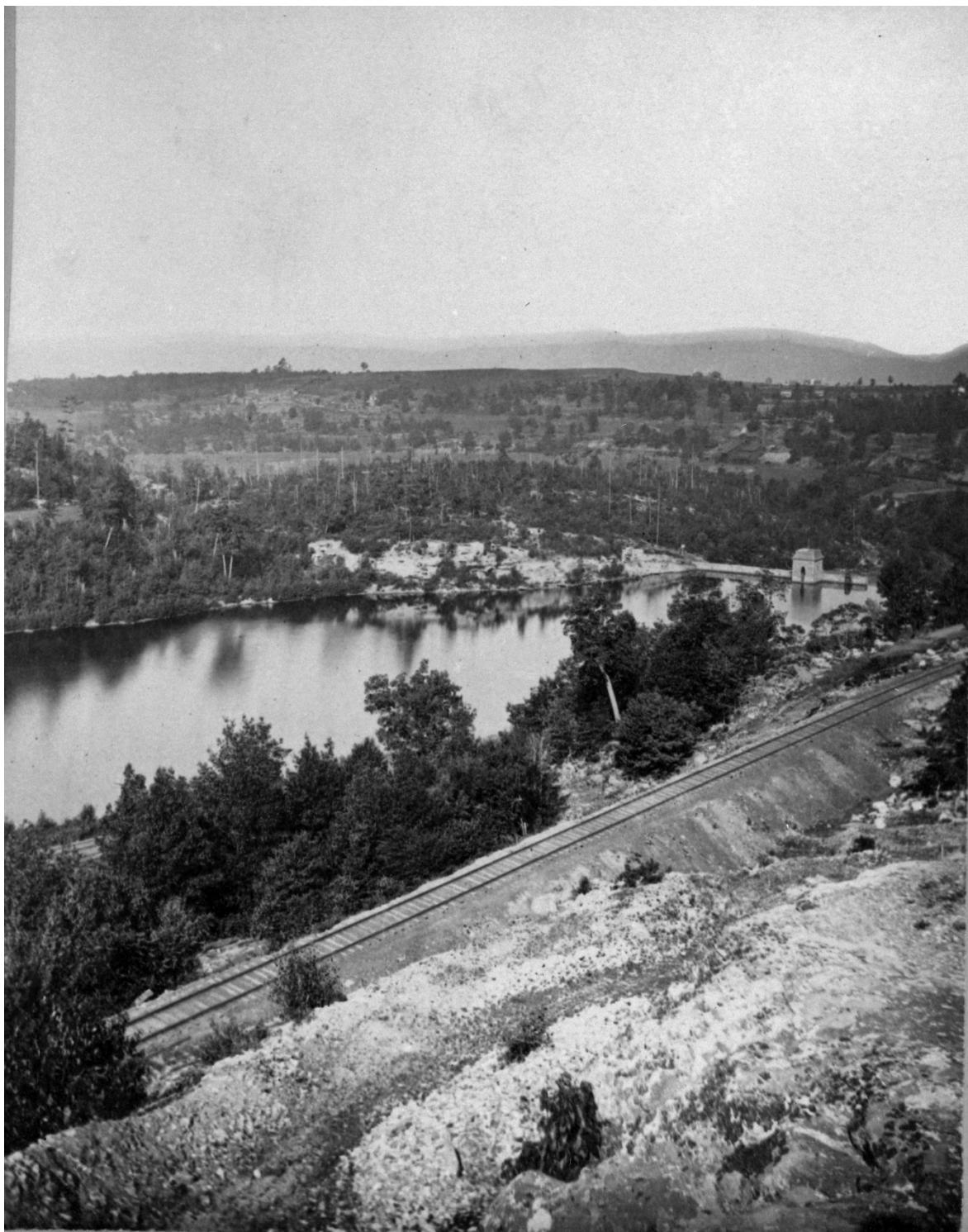
*Level No. 12 at Middle Creek Falls*



*Possibly Mackey's Tannery along Roaring Book, Dunmore*



*Plane No. 6 (Double-Tracked)*



*Rocky Bluff (PCC left background), DL&W tracks, and No. 7 Reservoir*



*West Portal, Tunnel on No. 11, 755 Feet Long*



*Work Crew, Saving Metal, During Scrapping at the Close of the PCC Gravity in 1885*

2. *History of HAWLEY Pennsylvania 100<sup>th</sup> Anniversary Celebration, August 14 to August 20, 1927* by M. J. McAndrew. Copies of this book are included in the holdings of the Wayne County Historical Society, Honesdale. This history by M. J. McAndrew contains much very good information about the Pennsylvania Coal Company's Gravity Railroad (pp. 28-38), as follows:

--PCC Gravity road completed in the spring of 1850; first load of coal, May 1850 and 111,014 tons of coal were sent to market that year. In 1851, 316,017 tons were shipped (which was about 3/4<sup>th</sup> the amount shipped by the D&H that same year).

--the loaded and light tracks were a mile apart at some points on the line.

--Planes 13, 14, 15, and 16 had water wheels initially

--the PCC had over 900 coal cars + cars for moving other commodities; the number of cars was increased daily at the rate of 6 to 8 cars, which were turned out by the car shops at Hawley

--coal cars: an oblong box, 10 1/2 feet long by 3 1/2 feet wide; could carry 5 tons of coal

--“The box or body of the car as it was called rested on two four-wheeled trucks inside the wheels. A cast iron plate was spiked on the top of the truck frame fitting into a similar plate secured to the bottom frame of the body. The wheels were open and loose on the axles and held in place by a collar forged on the axles. About four inches of both ends of the axles were lathe worked perfectly smooth and rested into a half round piece of brass fastened to the under side of the truck frame. Grease or oil plans were placed along the track four miles apart, with a brush attached to either end of an iron rod held in place by springs with an upright piece of sufficient height to strike the axle and thus dip the brush into the oil, fly back and strike the brass on the part of the axle bearing on it. Not a fourth part of all cars was equipped with brakes, and the men would carry six or eight puddle sticks, as they were called, to be used when handling cars without brakes. These sticks were shaped like a potato masher with a hole in the small end through which they run a wire with which to carry them. The brakes were a series of levers on the outside of the car and one on the end which the brakeman pressed down with his weight and held there by a ratchet [ratchet] until released.”

--“The planes or inclines were first equipped with hemp ropes three inches in diameter, but on account of expense and cost of repairing was soon displaced by a wire cable one inch in diameter. When the cable was first put in service it was wound around two large cast iron wheels which were held by a piece of shafting attached to the power. At an equal distance apart a cone consisting of four links was placed in this cable so that one was at the foot of the plane when the other was at the head. On the loaded track a man was employed to attach the cars to this cable. Five loaded cars were hoisted each time and they were taken care of at the head of the plane by a man employed for that purpose. On the light track or track on which empties were returned the

carmen did this work and eight cars were lifted each trip. The cars were fitted with a single link on one end and a link and hook on the other, in this way the entire train was linked together. A chain four feet long, made of inch iron with a hook on each end was supplied for every five cars. With this chain or 'sling' the cars were drawn up the plane. One hook was attached to the cars and the other to the cone in the cable before described, and when thus hooked the engineer supplied the power and the cars 'hoisted' at a good rate of speed. An automatic signal notified the engineer when the first car of the trip reached the top; the cable was then slowed down, the headman or runner would catch the hook that was in the car with his right hand and as soon as the slack permitted, loose it from the car, give it a sort of half twist which would throw the other hook from the cone, step out of the way of the cars, give the chain a throw that would raise it in the air, catch the second hook with his left hand and throw both on a cleat which was nailed in the side of the car to receive it, then proceed to the next plane, repeat the operation until the round trip was completed, which required from ten to twelve hours. The men were paid by the number of loaded cars delivered at Hawley. Empties were returned to the mines free."

--"The water of the Middle Creek was brought in at a suitable elevation to form a water power sufficient for the operation of the foundry, machine shop, hoisting, screening, and otherwise preparing coal for market. A dam was built in the Middle Creek at nearly the west end of Marble Hill as it now is. A little 'canal,' as we called it, was constructed from this dam to the foot of number thirteen plane. A large water-wheel was located near the shops to produce blasts for the foundry and operate the machine and other shops. Another wheel was located at the foot of thirteen for hoisting cars. This wheel was in charge of Pat Kennedy. The 'Little Canal' was ten to twelve feet wide, two and one-half feet deep and was supervised by Lawrence Roach. Unfortunately Mr. Roach had one artificial leg and was hardly able to cope with the youngsters of the 'Hill,' who would put down the gates that they might get the fish that would school near the spillway. They would also put boards in the canal on which to learn to swim and otherwise obstruct its course."

--"The railroad from number six plane, Dunmore to Hawley and return, was operated by twenty train crews. Each crew consisted of three men, a car-runner and two assistants. The car runner rode the rear end of the train and kept a record of the number of loaded cars brought to Hawley and to see that an equal number of empties were returned to the mines. The railroad was operated six days a week from 6 o'clock in the morning until about sunset. The train crews lived along the line at various places and a day's work consisted of starting the train, either loaded or light, from their place of abode in the morning to the end of the line and back to their home before dark.

The first Dunmore train was manned by Milton Decker, John Parker and Edward Quinn.

Second Number Six: Henry Conn, Washington Spangenberg and William Brundage.

Number Nine: William Ocksendrader, John Snook and Henry Snook.

First Number Eleven: William Biesecker, Wells Benjamin and Charles Benjamin.

Second Number Eleven: John Burns, John Collins and George House.

Third Number Eleven: Columbus Hubbard, William Hammond and F. M. Gaylord.

First Number Twelve: Alexander Correll, Orrin Correll and Alfred House.

Second Number Twelve: Daniel Buckland, James Dowd and Abram Swingle.  
Third Number Twelve: Samuel Hetzel, Peter Hetzel and John Hafler.  
Number Twelve Level: John Sampson, Hayden Sampson and Isaac Male.  
First Hawley Crew: Abram Kirby, Henry Vaughn and David Bishop.  
Second Hawley Crew: Frank Enslin, Cornelius Shaffer and George Turner.  
Third Hawley Crew: Jehil Nicholson, Thomas Finan and John E. Roach.  
Number Seventeen: Lewis Arnold, John Hawk and Arnold Almon.  
Number Eighteen: Allson Vandervoort, Jacob Curtis and Lyman Swingle.  
Number Nineteen: Albert Sheldon, George Foote and Henry House.  
Number Twenty: Henry Maser, Orlander Brown and William Masters.  
Number Twenty-One: John Heiney, John Vangorder and Allison Secor.  
Second Twenty-One: Dudley Waters, David Frost and John Waters."

--"This list makes up most of the original trainmen that came into Hawley. Among those that I remember who were also trainmen at that time were the following: At number six: Frank Secor, John Bevers, Byron Mott, Warren Grand, Eber Branning, Thomas Duffy and David Brink. At number nine: Michael Malia, Watson Swingle, Philander Moon and James Black. At number eleven: Elijah Swingle, Jasper Kiser, Robert House, Merritt Swingle, Leander Swingle and Finley Swingle. At number twelve: George Shaffer, George Correll, John Correll, Q. M. Curtis and James Swingle. At Hawley: James Vandermark, Wesley Vangorder, Oscar Stone, and John Van Camp. Second Hawley: Victor Stone, George Teeter and Oscar Kirby. Third Hawley, Milton Turner, Louis Spall and James Compton."

--"There were many others who from time to time worked on the road, but to the best of my recollections the above names are those who were in the line of service earliest and longest.

The engineers and firemen in charge of the stationary engines, Dunmore to Hawley and return, were as follows:

Number Six: Alonzo Ellis, Charles Bradley and William Stanton.  
Number Seven: William Clark, Patrick Gratton and Asher Butler.  
Number Eight: John Butler, William Snyder and Hugh Donnelly.  
Number Nine: Moses Curtis, John Carney and Edward Fitzpatrick.  
Number Ten: John Jones, William Morgan and Isaac Smith.  
Number Eleven: Robert Wesley, John Butler and William Young.  
Number Twelve: William Green, Reuben Ames, James Bigart and Bart Swingle.  
Number Thirteen: William Chambers, Byron Davis, William Bigart and William Mills.  
Number Fourteen: John Bigart, Byron Davis and William Bigart.  
Number Fifteen: Jacob Ames, Ezra Swingle, Charles Brower and Lorin Davis.  
Number Sixteen: John Scragg, Patrick Brown and William Hand.  
Number Seventeen: Charles Harding, Patrick O'Hara and Abram Kirby.  
Number Eighteen: Charles Brady, Samuel Elston and Thomas Nicholls.

Number Nineteen: Giles Green, Charles E. Mills, William Hand and Lewis S. Laubscher.

Number Twenty: George Brown, Barton Swingle and Dave Mann.

Number Twenty-One: William Brown and James Brown."

--"The machine shop was under the management of Mr. Stuart. Oscar Freeman was in charge of the blacksmith shop. George B. Hardenberg and Brien Feeley were foremen on the docks. The boat loading was under the supervision of John Connell, William Roach and John Curran. The coal pile, which was under supervision of John Connell, William Roach and John Curran. The coal pile, which was the accumulation of coal at Hawley during the winter months while navigation on the canal was closed, was in charge of Patrick Hoban. James Murphy was the boss boilermaker."

--"Mr. Murphy was a little more than six feet in height and was the standard by which houses were built on the 'Hill.' Any house in which he could stand with his hat on, was high enough for the family."

--"Mr. A. H. Vandling was the superintendent of all coal operations in and about Hawley. Mr. James Archbald was the General Superintendent, dividing his time between the Pennsylvania Coal Company and the Delaware & Hudson Canal Company. Mr. John B. Smith was in charge of all machinery. In 1854 Mr. Archbald resigned and Mr. Smith was given general charge of the entire interests of the Pennsylvania Coal Company in Pennsylvania, up to the time of his death in 1895. At that time his son, George B. Smith, was appointed to fill the vacancy thus made as General Superintendent, and continued as such until the sale of the company to the Erie Railroad Company in 1901."

--"Besides the twenty coal trains before mentioned operated on the Pennsylvania Coal Company's Gravity Railroad between Number Six (Dunmore) and this place [Hawley], two passenger trains were operated; one leaving Dunmore in the morning and making a return trip to that point and one leaving Hawley about the same time, also making the return trip. Robert Headley was the first conductor on the Hawley train and James Fitzpatrick was his brakeman. After Headley, Chester Potter ran the train for a number of years and was succeeded by John Brink, who continued as conductor till the Gravity was abandoned. Peter Seigel was in charge of the other passenger train for a number of years and was succeeded by Charles Elston, who continued in this service till operations were ceased on the Gravity road."

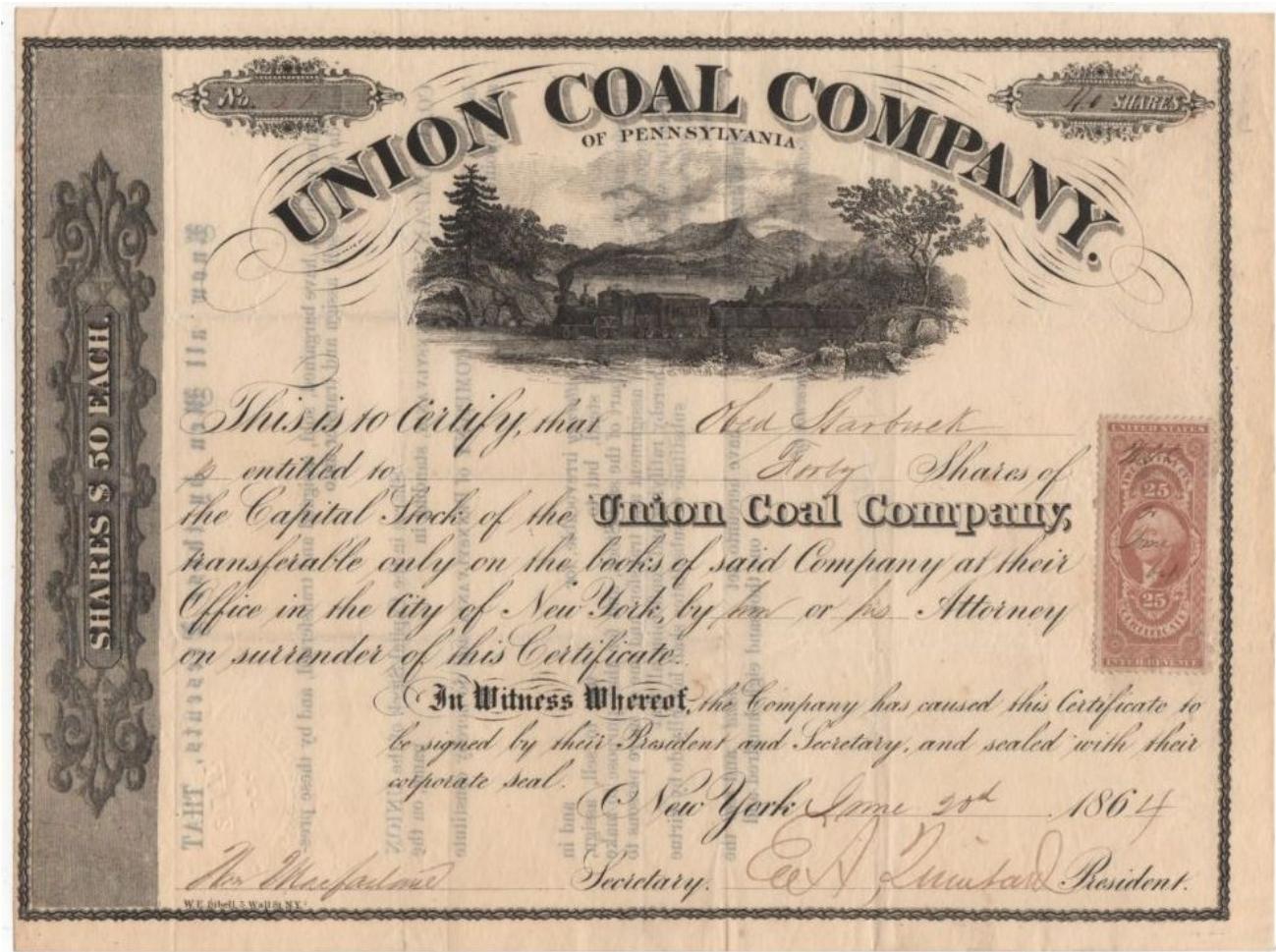
--"Each pioneer passenger train consisted of two passenger cars similar to the one now placed in front of the West Hawley station. Each coach seated about twenty people and the trip was made one way in about two hours. The coach now placed in front of the local railroad station was presented to the people of Hawley by John J. Mantell, then Superintendent of the Wyoming division of the Erie Railroad, on July 4, 1915, as a memento of early railroading and the Gravity railroad."

--"In 1865 Stanley Gaines, a veteran of the Civil Way, came to Hawley and became local Superintendent of the Gravity Railroad and the Pennsylvania Coal Company's holdings in this section, succeeded by A. H. Vandling. Mr. Gaines was of mechanical turn of mind and at once began many improvements on some of the old methods then in practice. He remained in charge up to the time of his death on September 17, 1882. Mr. Gaines brought with him Monroe Thorpe, a telegraph operator, who took charge of the key in the company's local office. This was the first telegraph office in the community and was followed in 1867 by the Delaware and Hudson Canal Company installing telegraph in their local office and along their line by Charles Peterson. The first operator for the D. & H. was Jessup Lord, followed by Lew Bishop, Dewitt Gemung and William Quinney. The latter continued with the company till the close of the office in 1898. "

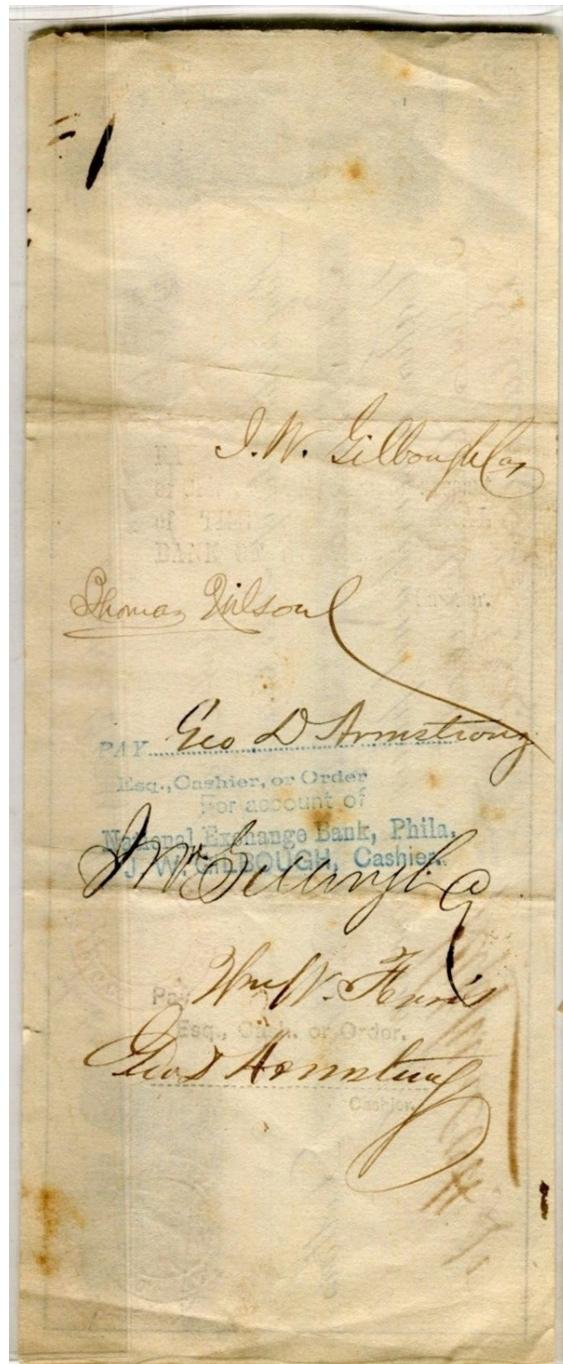
--"Michael Corcoran was a track foreman for the Pennsylvania Coal Company and had charge of what was known as Number Thirteen level. The Corcorans, the Laughneys, Reaps and Farrells were from Killala in County Mayo, Ireland, where much of their time was given to fishing for pleasure and profit. They were not long in their new country when they found good fishing in the Paupack River at Wilsonville, where they would go to buy lumber for building and slab wood for fire. A story is told of the Corcoran brothers, for which we cannot vouch at this time. One Sunday morning, preparing for their weekly trip, Jack could not find his fishing pole, which one of the children had misplaced. Patsy became impatient and said, 'Botheration with the pole, bring the creel and a shovel with ye, and hurry up, we must be back for the first Mass.'

\* \* \* \* \*

3. Union Coal Company stock certificate, 1864, offered for sale on E-Bay, February 9, 2017; our thanks to John V. Buberniak for bringing this item to our attention.



4. Union Coal Company, Wilkes-Barre, Pa., check dated November 11, 1867 for \$362.77, payable to "Thos Wilson Esq cash". Check offered for sale on E-Bay on November 9, 2017; our thanks to John V. Buberniak for bringing to our attention this item on E-Bay.



Detail of check, showing  
Union Coal Co. stamp:  
“UNION COAL CO. /  
WILKES BARRE PA.”



Union Coal Company check, dated "Wilkes Barre Nov 11<sup>th</sup> 1867," for \$362.77, payable to "Thos Wilson Esq cash":



5. Plane No. 14 (pp. 353-355 in Volume IV):

New owners (in 2017) of engine house foundation on Plane No. 14: Paula and Scott Bennett:



Sent to Carol Dunn at the Wayne County Historical Society, Tuesday, December 5, 2017 9:00:06 AM:

Subject: Advice for preservation of intact D&H Gravity RR powerhouse foundation?

My wife Paula & I recently moved into a new home on Bear Swamp Rd outside of Honesdale. We have been pleased to discover an intact foundation for a gravity railroad powerhouse on the property (photo attached). The stone work is phenomenal and still plumb after all these years.

We also have intact portions of both the unloaded & loaded tracks on our property, which is located on a north face of a hill bordering the Lackawaxen River. With minor exceptions, the stonework supports for the tracks are still doing their job despite the steep terrain & passage of time.

We are dedicated to preserving this treasure, and would appreciate any advice you may have to offer in that regard. We would also invite you to give us a shout to stop by & check out this marvelous piece of our preserved history if you are interested.

Paula and Scott

Dear Scott:

Thank you very much for your email and for the kind offer to visit your property and see the railroad powerhouse location in person.

There are MANY local historians that would jump at the chance to see this wonderful historic treasure. Specifically, two local organizations might want to have a short tour, with your permission of course.

One group is the D&H THC = Delaware and Hudson Transportation Heritage Council, which includes members from Carbondale through Kingston, NY, the 130+ miles of the D&H gravity railroad and canal. This group meets 4 times a year, at different locations along the 130+ mile route. WCHS would love to be able to offer your location as a short "side tour" at one of the quarterly meetings. Usually 20 people attend a meeting.

The other group that would be interested is the Local History Round Table, comprised of representatives from local historical societies in Wayne and Pike counties. Perhaps another short tour could be offered to this group. About 15 people attend each meeting.

Please let me know if you might be interested in allowing these two groups to visit your site. If you think "yes", we would like an opportunity to visit your site in advance, so we can research its history and be ready to tell the story to these groups.

Of course, we will provide you with a copy of all research we do.

Carol Dunn, WCHS Exec Director

## **Gravity Railroad engine house foundation**

S. Robert Powell <srp18407@gmail.com>

12/10/17

To oldbear@echoes.net

Sunday, December 10, 2017

Dear Scott:

Pleased to learn that you and your wife Paula are now the guardians of the Plane No 14 engine house foundation on the D&H Canal Company's Gravity Railroad.

The Carbondale Historical Society has a strong interest in all aspects of the D&H Gravity Railroad, having published in recent years Volumes 1 through 20 in a 24-volume series on the D&H (see attached flyer).

Volumes 21-24 in that D&H series will be published in October 2018. Copies of all of the published volumes are now available at the Wayne County Historical Society.

Maps and photos of your site are included in Volume II, pages 117-120, and Volume IV, pp. 353-355 in that series.

I, personally, would very much like to visit your site in the Spring.

RE: preservation of the site: Hands off is the best policy. Fallen tree branches and leaf accumulations could be removed, but please don't do anything to the engine house foundation itself.

Sincerely,

S. Robert Powell  
Carbondale Historical Society

-----

12:31 PM, 01-02-2017

Dr. Powell,

Thank you so much for the info!

I stopped by the WCHS museum back in December & purchased volumes 2 & 4. The history is fascinating! We've also been chatting with some of the locals, who tell us that the reference to "Fortenia" shown on the USGS topo maps is derived from "Plane No. 14" and that "Steene" is derived from "Plane No. 16."

We would be very pleased to have you stop by anytime. Both the light & loaded track beds are in remarkably good shape, and there are numerous examples of D&H stonework along both trails. In addition, there is stonework next to the river which is labeled "bridge abutment" on our survey map, but as I read your text, I believe the stonework may actually part of the dam & raceway that were used to power the waterwheel that pulled the empty cars up the plane prior to the installation of the engine house on Plane No. 14 in the 1868 improvements to the Gravity RR.

I have copied our neighbors, Michael & Darci Sorrentino [djsorrentino4@gmail.com], on this email. Between the two couples, we have about 1/2 mile of hillside with the light & loaded gravity trackbeds. One can walk down the light track from our house past the engine house foundation to a stone box culvert on Mr. Sorrentino's property & then come back on the loaded track for a delightful 1 mile hike through the woods.

I've been following your advice & just cleaning away accumulated leaf debris. The foundation stonework is in wonderful shape & just as plumb as the day it was laid. I would also be interested in your opinion on the stonework next to the river.

Please feel free to give me a shout any time you want to come by & check out the grounds. You will always be most welcome!

Scott Bennett  
275 Bear Swamp Rd  
Honesdale, PA 18431  
(570) 470-2703  
oldbear@echoes.net

---

E-mail:

January 4, 2018

Dear Paula and Scott:

It's comforting to know that you and Michael and Darci Sorrentino have such a high level of respect for the remaining features of Plane No. 14 and the loaded track on the properties that you own.

Thank you for the invitation to visit those sites. Some time in early April would probably be a good time to do so, and I will be in touch with you again as soon as spring gets here.

Beginning at the time of the Civil War, year round, as many as a million tons of coal a year passed through your area on its way to the canal in Honesdale. Passenger trains from Carbondale to Honesdale also passed through your area until well into the twentieth century.

See you in the spring.

Sincerely,

S. Robert Powell  
Carbondale Historical Society

---

See : SRP's D&H series, Volume II, pp. 117-120; also Volume IV, pp. 353-355:

From Volume IV, p. 353:

Here are two Plane No. 14 photos that were taken by Dick Temple ([d.temple@hotmail.com](mailto:d.temple@hotmail.com); 315-569-8028) in 2010 of two sites on property that he now owns. These two photos were made available to the Carbondale Historical Society on August 19, 2011.

The photo on the left was taken from half-way up Plane No. 14 at the crossing of the light track (on the left) and the loaded track (on the right). The photo on the right of the stonework remaining of the engine house at Plane No. 14 was taken looking down the plane.



## 6. Shohola Train Wreck, July 15, 1864

As we study the Gravity Railroad in the 1860s, it is difficult not to think about the horrific train wreck that took place on July 15, 1864 at Shohola, PA. The following article on that wreck was published in the January/February 1995 issue (Volume XXXIII, Number 6, pp. 48-53) of *Civil War Times Illustrated*: 'The Great Locomotive Wreck,' by Jack Jackson.

# The Great Locomotive Wreck

*Although buffered from the nearest battlefield by hundreds of miles of fields, forests, and mountains, 1,000 Federal and Confederate soldiers could not escape the tragedy of war.*

By JACK JACKSON

**A** 30-ton locomotive pulling a woodtender and 17 passenger and freight cars clattered along the Erie Railroad line in southeastern New York state on a hot July 15, 1864. Loaded aboard were 833 Confederate prisoners of war and 128 Union guards. The train and its passengers were about an hour away from going down in history as victims of the world's greatest railroad disaster.

The guards were members of the 11th and 20th Regiments of the United States Veteran Reserve Corps under the command of Captain Morris L. Church. Most of them rode in the train's last three cars, with five reserves inside each of the first three boxcars and several standing atop some others. Off-duty guards slept, played cards or passed the time with soldiers' talk.

The Confederates were the fourth batch of prisoners to be sent from the crowded compound at Point Lookout,

Maryland, to the newly opened camp in Elmira, New York. Most had been captured the previous spring on Virginia battlefields.

About a dozen of the railcars were passenger coaches with windows, giving many of the prisoners a clear view of the thickly forested Pocono foothills. To the Virginians, North Carolinians and Georgians, the ride through the idyllic ridges and hollows must have seemed like a trip home. At the very least it seemed like a safe journey heading far from the war's battlefields.

At 1:00 P.M. the train stopped in Port Jervis, New York, to pick up a supply of food and water. As a crowd gathered at the station, some veterans of the sorely depleted Army of Northern Virginia reflected on the war's grim realities. One pessimistic Confederate surveyed the multitudes of able-bodied men and lamented that the Confederacy already had "every available man in the ranks."

He concluded, "The South might as well give up."

The train left Port Jervis at 2:00 P.M. and soon crossed into northeastern Pennsylvania's Pike County, a few miles west of Port Jervis. Daniel Tuttle, the fireman who manned the engine's cab along with engineer William Ingram, heaved three-foot lengths of cordwood into the firebox to maintain speed. Running at an average of 20 miles per hour, the train was expected to arrive in Elmira late that night or early the next morning.

A number of factors had combined to place Engine 171 on that particular stretch of track at that particular hour. Perhaps the most influential were the



During the Civil War, railroad crashes were relatively common. Unlike the Shohola wreck, however, most were caused by enemy guerrillas. Below, workmen try to right the locomotive Chas. Minot, which overturned and killed five people after hitting a section of sabotaged railroad track. The two engines at Shohola did not fare so well. At right an early 20th-century postcard shows the Shohola railroad station, which the train carrying the soldiers passed minutes before colliding head-on with a coal train.



Union's termination of the prisoner exchange system and the exponential increase in the number of prisoners captured, a combination that quickly led to overcrowded prisons.

In March 1864, when Ulysses S. Grant had been elevated to the rank of lieutenant general in command of all Union armies, he had understood his

mandate from President Abraham Lincoln to be the destruction of General Robert E. Lee's Army of Northern Virginia. Using the Army of the Potomac as his hammer, Grant pounded away at his objective all spring, from Virginia's Wilderness bordering the Rapidan River, to the vital railroad center at Petersburg.

May and June of 1864 saw the Civil War's most prodigious bloodletting. The Army of the Potomac alone lost some 60,000 men. Proportionally, the Army of Northern Virginia's losses were at least as severe and included an unusually large number of men taken prisoner. Confederates processed into the Federal camp at Point Lookout, Maryland increased sharply, from 122 in April to 6,876 in May. As the rolls in prisoner-of-war camps grew, the South, already outnumbered by Union troops, was the side with the most to lose.

Prisoner-of-war facilities in both the North and South were strained to their limits. Point Lookout's population doubled to 12,617 in May, and orders for new detention centers came down from the Union high command. One such order, dated May 18, 1864, directed that the military barracks at Elmira, New York, be converted into a prison camp. Elmira received its first prisoners on July 6.

Meanwhile, Lee was conducting some politically motivated generalship of his own. Hoping to demoralize, discredit and perhaps even unseat Lincoln's administration, he sent Major General Jubal Early and 10,000 men on a Northern campaign that succeeded in reaching the outskirts of Washington, D.C., on July 11, 1864. Suddenly Point Lookout, 60 miles downstream from the Federal capital at the confluence of the Potomac River and the Chesapeake Bay, was seen as more than merely overcrowded. Its 15,000 Confederate residents were a valuable military objective. Three contingents of prisoners had already been transferred to Elmira. Hasty preparations were then made for a fourth; on the evening of July 12, Captain Church and

POST CARD COURTESY OF ROBERT LONGONE



boose, gave the sign to go ahead, and Engine 237 slowly swung onto the mainline, picked up Boyden, and headed east. At 2:45 the telegraph operator at Shohola signaled Kent that the troop train was passing by, heading west, and in that instant disaster became inevitable.

The four miles of track between Shohola and Lackawaxen had been extremely difficult to construct. Palisades of rock facing the Delaware River had been blasted away to make room for the road bed. One particularly treacherous section, known as "King and Fuller's Cut" for the contractors who had cleared it, followed a blind curve that allowed for as little as 50 feet of visibility ahead. When the two locomotives entered King and Fuller's Cut from opposite directions at about 2:50, only Engineer Hoitt had time to jump clear.

In all of history to that moment, there probably had never been a noise quite like the meeting of Erie Engines 171 and 237. Hundreds of tons of metal, coal, and wood collided in a thunder pierced by the shriek of hot steam and screaming men. "The two locomotives," recalled Veteran Reserve guard Frank Evans, "were raised high in the air, face to face against each other like giants grappling."

Upon impact, the troop train's wood-tender jolted forward and buckled upright, hurling its load of firewood into the cab. Tuttle's life was instantly crushed from him, but Ingram was not so lucky. The avalanche of wood pinned him against the split boilerplate and scalding steam. "where he was held in plain sight and slowly roasted to death," Evans said. "With his last breath he warned away all who went near to try to aid him, declaring that there was danger of the boiler exploding and killing them." Inside the cab of Engine 237, Boyden and Prentiss also died in a crush of cordwood and torn steel. Hoitt and Martin survived.

In 1964, the 100th anniversary of the Shohola wreck, Elmira historian Joseph C. Boyd wrote for the Chemung County Historical Society in New York: "...the wooden coaches telescoped into one another, some splitting open and strewing their human contents onto the berm...where flying glass, splintered wood, and jagged metal killed or injured them as they rolled. Other occupants were hurled through windows or pitched to the track as the car floors buckled and opened. The two ruptured

**The Erie Railroad line in northeastern Pennsylvania ran alongside the Delaware River. Although the tracks are not visible in this postcard scene, the adjacent telegraph poles are.**

his Veteran Reserves boarded their 833 charges onto the steamer *Crescent* bound for New York City.

Disembarking on the afternoon of July 14, the prisoners and their guards were shuttled via the Pennsylvania Railroad to Jersey City, New Jersey, where they remained overnight. At 4:00 the following morning Engine 171 was waiting to take them the rest of the way to Elmira. Contemporary accounts indicate that the train was classified as an "extra," meaning it ran behind a scheduled train. In accordance with standard railroad practice, the Erie Railroad had placed warning flags on the scheduled train, West 23, and given the right-of-way to Engine 171.

The final pieces of the mechanism locking the men into a historic tragedy had begun to fall into place. The departure for the last leg of the prisoners' trip — from Jersey City to Elmira — was postponed while guards located several missing prisoners. Then, after leaving the depot, the train was delayed at a drawbridge crossing shortly after the bridge had been opened for morning ship traffic to pass. The train finally pulled into Port Jervis four hours behind schedule.

For the next 23 miles, from Port Jervis to Lackawaxen, Pennsylvania, the train ran on a single track that wound along sharp curves in the Delaware River. Ahead at Lackawaxen there was a junction with the Hawley Branch, a rail spur connecting the Scranton coalfields with points east. In the junction station, seated at the tele-

graph operator's desk and having a very bad day at work, was the single deadliest component of the machinery that was already working against the men riding behind Engine 171.

Douglas "Duff" Kent was the operator on duty in Lackawaxen. Reputedly a habitual drunk, Kent had been to a dance in Hawley the night before and reported for work in "a partial state of drunkenness." Kent saw West 23 pass by during the morning with flags warning of a special "extra" to follow. He wondered aloud several times as to the troop train's whereabouts. It was his responsibility to hold all eastbound traffic at Lackawaxen until the "extra" had gone through.

At approximately 2:30 P.M., while Engine 171 clattered west along the single track near the village of Shohola, a coal train of 50 cars steamed down the Hawley Branch to a stop at Lackawaxen Junction, four miles west of Shohola. It was the 30-ton Erie Engine 237, built by the New Jersey Locomotive and Machine Company in April 1863. Engineer Samuel Hoitt was at the throttle, and conductor John Martin in the caboose. Brakeman G.M. Boyden and fireman Philo Prentiss worked the cab with Hoitt. Martin descended from his post and entered Lackawaxen Station. "Is the track clear to Shohola?" he asked Kent. Kent replied that it was. With those fatal words the machinery was set in motion.

Martin relayed the information to Hoitt, who sent Boyden ahead to open the main switch. Martin, back in the ca-

engine tenders towered over the wreckage, their massive floor timbers snapped like matchsticks. Driving rods were bent like wire. Wheels and axles lay broken."

Dust slowly settled on a stunned landscape. The troop train's forward boxcar had been rammed by the trailing cars into a compact mass just six feet long. The remains of 37 men made up part of that mass. Evans saw "headless trunks...mangled between the telescoped cars" and "bodies impaled on iron rods and splintered beams." At least 51 Confederate prisoners and an official total of 17 Union guards died either on the spot or within a day of the wreck. Thirteen soldiers of the 51st North Carolina Infantry lost their lives in a few seconds, making the disaster one of the war's costlier moments for that unit.

The first civilian to arrive on the scene was John Vogt, a farmer whose land bordered the Erie tracks. Within minutes he and his family stripped their farmhouse of sheets and blankets to cut into bandages. Villagers and farmers began to arrive in small groups. The

men helped survivors pull bodies from the wreckage. Confederate corpses were laid in rows along the embankment and at the edge of Vogt's rye field. The most hideously mangled among them were covered with grass and leaves. The Union dead were set apart and wrapped in blankets. Church was quick to throw a cordon of Veteran Reserves around the site, but five prisoners had already taken advantage of the chaos and escaped.

Erie Superintendent Hugh Riddle dispatched from Port Jervis two relief trains carrying railway workers and doctors. As the tracks were cleared, over 100 badly hurt men were removed to Shohola and quartered in the railroad station or in the Shohola Glen Hotel. There they were treated with kindness and given food, drink, and comfort, regardless of the uniforms they wore. Physicians worked through the night.

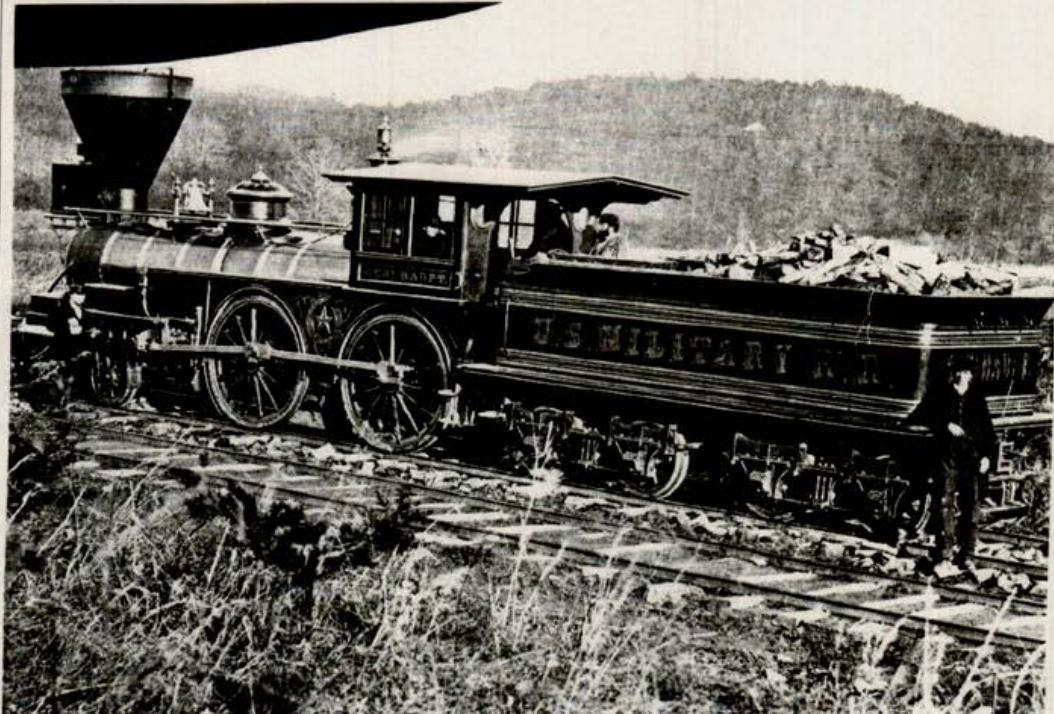
Writing to his wife from Elmira Prison 10 days later, North Carolina infantryman Albert G. Smith acknowledged the care he had received. "I got heart [hurt] in coming up hear by the

cars runing together but I am not confined," he wrote. "We are fareing very well and are treated very kind, more so than I thought we would be."

In spite of that care, two Confederate soldiers, John and Michael Johnson, died overnight in the village. They were taken across the Delaware to a small congregational church in Barryville, New York, and buried there. Today the graves are marked by a single stone and a small wooden cross.

Burial for the rest of the dead at King and Fuller's Cut continued until dawn on the 16th. It was impossible to identify all the bodies. Confederates were placed four at a time in crude boxes nailed together from the wreckage. The boxes were then lowered into a 75-foot-long trench. "Viewed by moonlight and with lantern," one newspaperman wrote, the burial scene was "a ghastly and horrible sight." Toward midnight an Erie wood agent surnamed McCormick arrived with conventional pine coffins for the Union dead, who were laid in individual graves.

Also arriving late that night were Superintendent Riddle and Pike County



**The General Haupt.** The locomotives destroyed at Shohola would have closely resembled this well-known woodburning steam engine.

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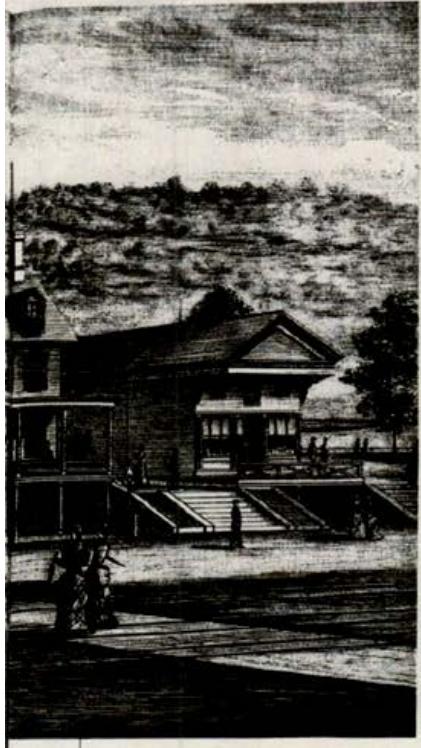
Associate Judge Thomas Ridgeway. Together with Church they convened an on-the-spot "inquest" that authorized the hasty burials and declared the accident "unavoidable." All parties, including Kent, were officially absolved from blame. The authorities' lack of action simply cannot be explained — unless both the army and the Erie Railroad, fearing an oversight or miscalculation on their part, did not want a detailed investigation of the Shohola incident. Whatever their motives, by prematurely closing the case they lost their chance to detain and question Kent, who was already out enjoying another night on the town. A local report claimed that the next morning Kent "crawled on board the express train and went West, since which time he has not been seen." A detective was sent after him.

The train on which Kent made his getaway left Shohola at 9:00 A.M. on July 16. By then four more men had died and were taken to the common grave at King and Fuller's Cut. Another special train was sent by the Erie for Church and his battered, exhausted survivors. That train pulled away from the Shohola station at 11:00 A.M. and ar-

rived in Elmira at 10:00 P.M. A week later Church returned to escort seven prisoners who had been too severely hurt to be moved immediately after the wreck. They too were taken to Elmira to wait out the war.

Church's official account of the Shohola incident is dated July 22, 1864. The numbers, dates, and times are scrupulously included. The "whys" and "what ifs" are not. Church's figures show a final tally of 787 Confederates delivered to Elmira in the fourth contingent from Point Lookout. The overall mortality rate for prisoners in the Elmira camp was 24.4 percent, so about 200 survivors of the wreck probably died in the prison.

In Pike County an official inquest jury was impaneled at the request of the coroner and the prosecuting attorney in Lackawaxen. Ridgeway's findings were dismissed, and Kent's negligence was cited. Kent was never heard from again, however, and neither the U.S. Army nor the Erie Railroad cared to reopen their investigations. In the larger scheme of things, with the Civil War approaching its climactic phase, the deaths of a few dozen noncombatants at an obscure



COURTESY OF ROBERT LONGORE

**The Shohola Glen Hotel (above), where a number of the soldiers were taken for medical care after the wreck. A single headstone (below) in a cemetery in Barryville, New York, marks the graves of John and Michael Johnson, who died that night. Their bodies were taken across the Delaware River for burial.**

PHOTO BY CARL MORELL



*Jack Jackson is a freelance writer from Horseheads, New York.*

Pennsylvania railway junction did not count for much.

Several decades later a generation of Erie passengers would gaze from their coach windows at the wooden markers in King and Fuller's Cut, unaware of the tragedy that had taken place there. About the turn of the century, Vogt, still living on his farm by the Erie tracks, guided a group of observers to the wreck site and burial ground. The crosses had by then rotted away. Soon public sentiment demanded simple respect and recognition for the Shohola victims. The next year Federal authorities directed that the victims' remains be disinterred and brought to Elmira's Woodlawn National Cemetery to be buried with the nearly 3,000 other soldiers who did not survive the prison camp.

On June 11, 1911, the Shohola dead were laid in another common grave, this time on the Woodlawn grounds. Their names were inscribed on two bronze plaques affixed to a single stone monument. Names of the Union dead face the cemetery's northern lawn. The Confederate names, appropriately, face south.

There has never been a completely satisfactory account of how many men died in the collision. Estimates range from 60 to 72, not including the two Johnsons from North Carolina who remain in the churchyard at Barryville. The violent and disfiguring nature of the deaths, the rushed burial procedures decided upon at the midnight "inquest," and the recurring flooding of the Delaware River make determining the number of bodies buried in Elmira a matter of guesswork.

The five Confederates who are said to have escaped at Shohola also remain a mystery. Shohola town historian George Fluhr writes that one was reported many years later to be living in the town of Matamoros on the New Jersey border some 20 miles away. Another apparently joined the Union Army as a means of returning South and was assigned to duty as, of all things, a prison guard.

Joseph Boyd concluded that it is "highly possible that some of the names on the Shohola Monument are those of the escapees; while some of the rebels who were killed were listed as having escaped." Given the catastrophic conditions surrounding the great Shohola train wreck, no one will ever know for certain. ■

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### Additions for Volume VIII:

1. **“Death of Ira W. Stone.** / The severe accident in which Mr. Ira W. Stone, of our city, on Friday of last week, upon the Railroad above town, described in our last issue, resulted fatally after about 57 hours. He died at 2 o'clock on Monday morning. The earnest efforts of friends, aided by the best medical advice attainable, proved unavailing. The injuries which caused his death seemed to be internal ones in the neck and chest. He was in the 32<sup>nd</sup> year of his age, and leaves a devoted wife and one child. Few cases have occurred, among our not uncommon frightful railroad accidents, in which the sympathies of the community were so deeply moved and so fully expressed. / The funeral services were held in the M. E. Church on Thursday A. M. and an impressive eulogy delivered by Rev. Y. C. Smith, D. D.” (*Carbondale Advance*, August 13, 1870, p. 3)

### Additions for Volume IX:

1. Picnic grove at Prompton:

**"Pic-Nic.** / The Presbyterian Sabbath School, of this city, will hold a Pic-Nic at Prompton, Wayne County, Pa., on Wednesday, August 3d, 1881. The cars will leave the Gravity depot at 8 o'clock, a. m., making the round trip to Honesdale and back to Prompton, to spend the day in the beautiful grove at that place. Returning, will leave Prompton about 4 o'clock, p. m. Fare for the round trip, for those not members of the Sunday school, Fifty cents. The public are cordially invited to attend." (*Carbondale Advance*, July 30, 1881, p. 3)

### Additions for Volume X:

1. *The Delaware & Hudson Company / 54 Ride Commutation / 35 Scranton and Carbondale 25 No. 17543 / Expires April 16, 1927.* Ticket purchased by John B. Jordan. Ticket donated to the Carbondale D&H Transportation Museum on August 23, 2017 by Seve Putzi, 119 Wyoming Street, Carbondale. Ticket found under a dresser drawer lining paper.



Here is the text of what is written on the ticket shown above, as read by John V. Buberniak:

**CONTRACT**  
The Conditions upon which this Ticket and the Coupons attached thereto are sold by the Delaware & Hudson Company and followed can be used by the holder, are as follows:

- 1st. That all coupons not used within the time named herein are void.
- 2nd. That all coupons will be void if detached by any person but the conductor.
- 3rd. That it is good only for a continuous passage between the points named, and every sum trip, will be considered as one person, and will require the collection of one coupon.
- 4th. That passage shall be taken only on such trains as stop at the stations named in this ticket.
- 5th. That this ticket will be forfeited if presented or used by any person whose name is not written on this ticket.
- 6th. That a duplicate of this ticket will not be issued under any circumstances.

I accept the above conditions.

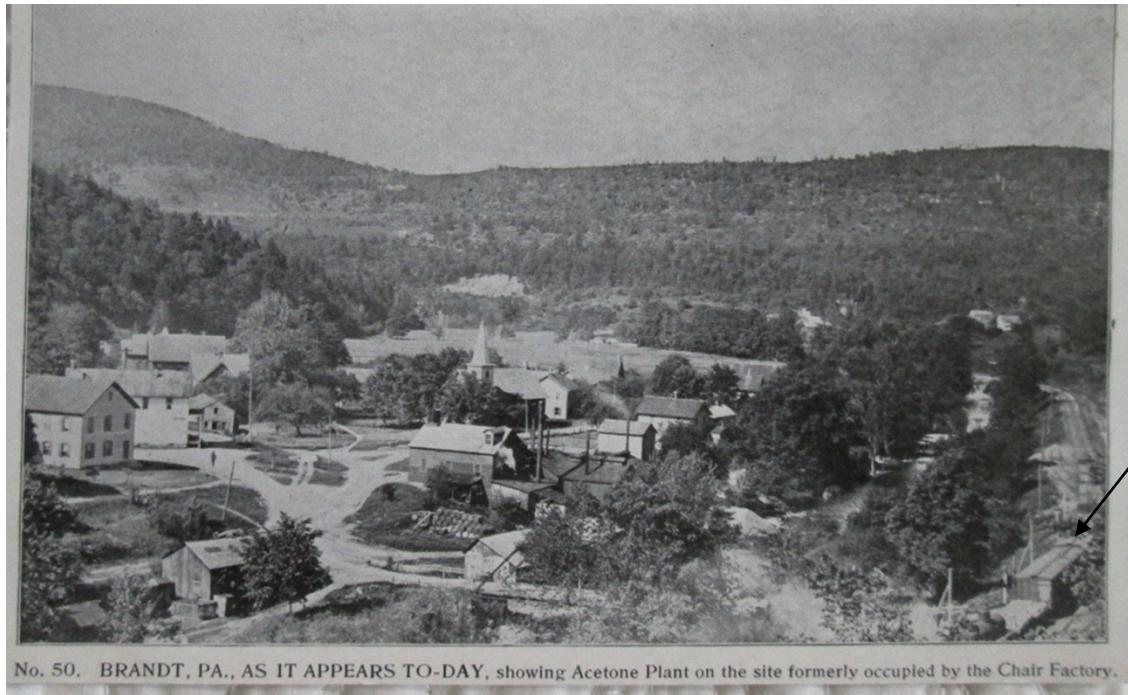
**WARNING.** The New York Public Service Commission Law now provides that no person shall obtain transportation at rates in schedules or rates of fares less than the regular rate of fares, or less than the regular reduced rate of fares, in violation of the conditions attached to any coupon or ticket issued by the Public Service Commission. Violation of the Public Service Commission Law will result in imprisonment or fine or both.

“This is the last book  
I bought on April 18th 1927  
they gave us a temp  
which they punched  
out the rides on here  
was back to the ????  
where I bought when I started  
Dec 10\_ 1900”



## Additions for Volume XI:

1. Photograph of Brandt, PA, circa 1910. Post card offered for sale on E-Bay on November 14, 2017. Our thanks to John V. Buberniak for bringing to our attention this card.



The Jefferson Branch of the Erie Railroad as it passes through the Brandt area.

“No. 50. BRANDT, PA., AS IT APPEARS TO-DAY, showing Acetone Plant on the site formerly occupied by the Chair Factory.”

Post card “Published by “C. D. Burton Lanesboro, Pa.”



2. More on Jefferson Junction, from John V. Buberniak, E-Bay, December 29, 2017:

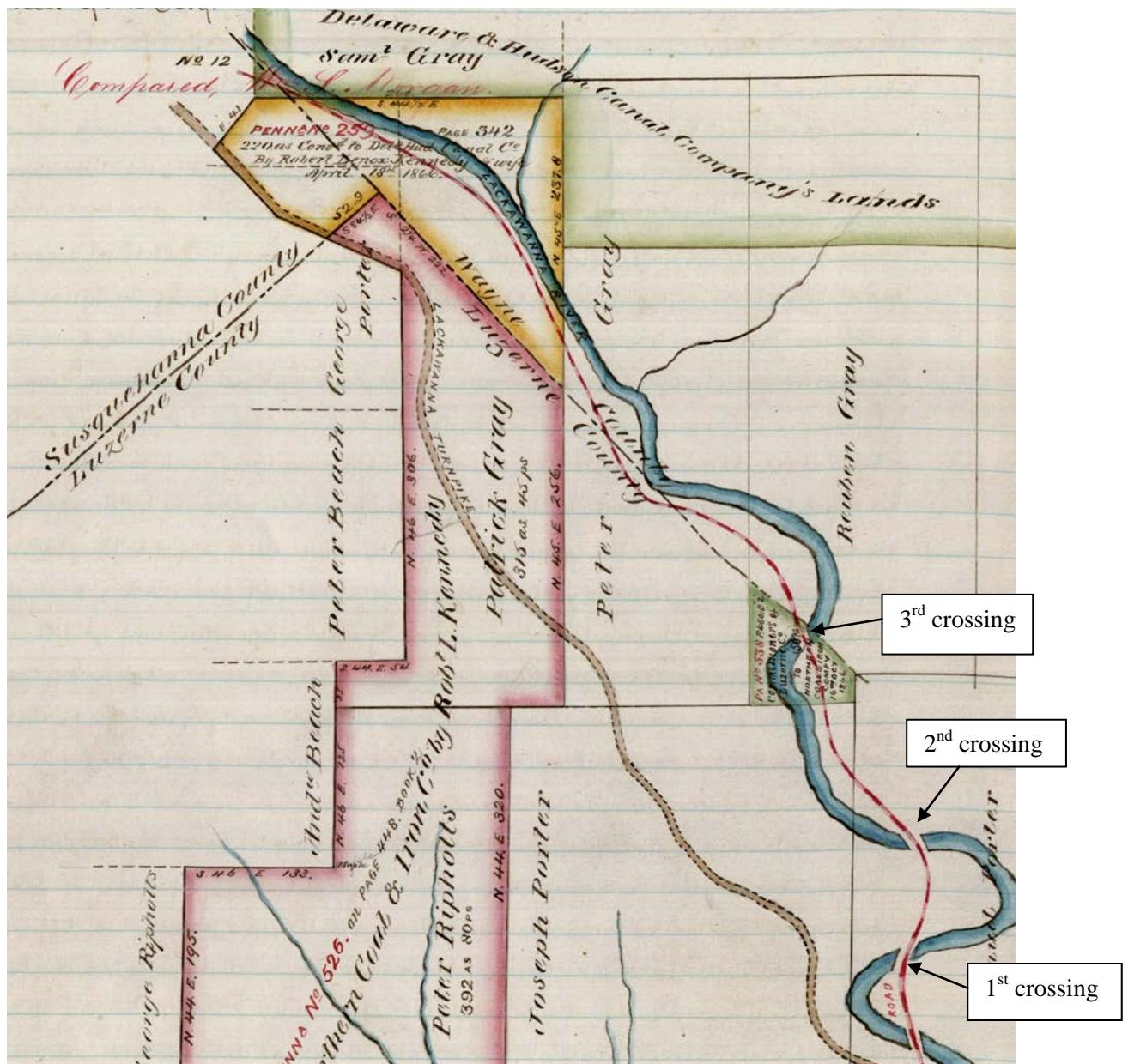


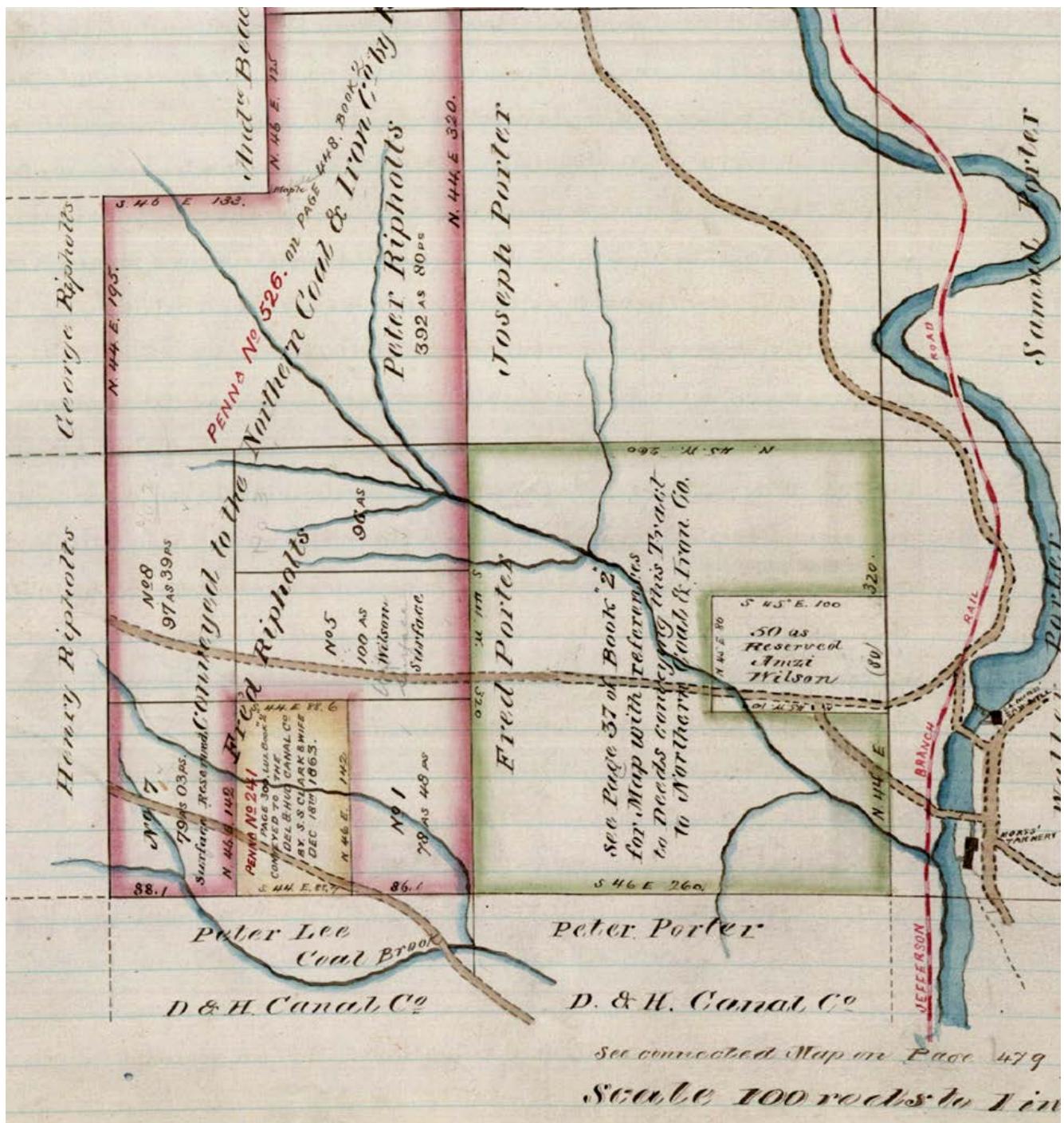
“Jefferson Junction, c. 1985, 1987: Both left tracks are from the Erie. You’re looking towards the viaduct. The D&H to Nineveh is on the far right. The two tracks on the left were originally the two mains going towards the viaduct, but at this late date (when the photograph was taken), one was used as a passing siding to run helper power and head end power change around the train.”  
John V. Buberniak, 12-29-2017

**JA Tower:** at Lanesboro Junction (at the top of the hill, where the Jefferson Branch connected to the Erie main line)

**JN Tower:** at Jefferson Junction (at the bottom of the hill, where the Erie connected to the Jefferson Branch)

3. *D&H Deed Book: Wayne, Pike and Susquehanna Counties, PA*; pp. 342-344: Deed: Robert Lenox Kennedy and wife to The Delaware and Hudson Canal Company, April 18, 1866. The map shown below (in two details, one on this page, and one on the following page) is given therein on page 344. As is clearly shown on this map, the Jefferson Branch of the Erie Railroad crosses the Lackawanna River three times between Carbondale (Luzerne County) and Forest City (Susquehanna County).





**Additions for Volume XII:**

1. "DEL. & HUD. CANAL & R. R. Co. / Albany & Susquehanna R. R. / Official Pocket Time Table. / of PASSENGER TRAINS / On the Main Line, between / ALBANY AND BINGHAMTON/ and over the / SCHENECTADY, CHERRY VALLEY & NINEVEH / BRANCHES / Issued from the General Ticket Office, / June 29<sup>th</sup> , 1874"

DEL. & HUD. CANAL & R.R.C.

Albany & Susquehanna R. R.

Official Pocket Time Table.

—OF—

PASSENGER TRAINS

On the Main Line, between

ALBANY AND BINGHAMTON

AND OVER THE

SCHENECTADY, CHERRY VALLEY & NINEVEH

BRANCHES.

---

Issued from the General Ticket Office,

JUNE 29th, 1874.

---

Trains are run by Albany Time.

---

H. V. OLYPHANT, S. E. MAYO,  
*Ass't Pres.* *Gen'l Pass'r Ag't.*

EASTWARD.				WESTWARD.			
6	4	2	MILES.	MILES.	1	3	5
ACC.	EX.	EX.			EX.	EX.	ACC.
				Arrive	Leave		
A.M.	P. M.	P. M.		.....	.....	A. M.	P. M.
8.20	8.00	1.50	142	ALBANY.....	0	7.40	3.10
8.04	7.45	.....	136	ADAMSVILLE.....	6	7.55	.....
8.00	7.43	1.33	135	SLINGERLANDS...	7	8.00	3.27
7.48	7.33	1.23	131	NEW SCOTLAND..	11	8.10	3.37
7.39	7.26	1.15	128	GUILDERLAND..	14	8.17	3.45
7.30	7.18	1.07	125	KNOWERSVILLE...	17	8.25	3.53
7.11	7.01	12.49	118	DUANESBURGH...	24	8.44	4.10
7.02	6.54	12.41	115	QUAKER STREET...	27	8.53	4.18
6.52	6.44	12.31	111	ESPERANCE....	31	9.03	4.28
6.39	6.32	12.18	106	CENT'L BRIDGE..	36	9.15	4.42
6.15	6.24	12.09	103	HOWE'S CAVE...	39	9.23	4.50
5.58	6.10	11.54	97	COBLESKILL....	45	9.43	5.07
5.35	5.54	11.25	92	RICHMONDVILLE..	50	9.56	5.20
5.05	5.37	11.07	85	EAST WORCESTER.	57	10.14	5.37
4.45	5.23	10.54	80	WORCESTER....	62	10.26	5.49
				.....			
<b>10</b>	4.25	5.10	10.41	75	.....		
<b>F. &amp; P.</b>	4.13	5.01	10.33	72	.....		
	3.53	4.46	10.20	67	JUNC. (C. & S.V.R.R.)	75	11.01
<b>A.M.</b>	3.47	4.41	10.16	66	.....	6.22	10.22
12.00	3.24	4.25	10.00	60	COLLIERS....	76	11.05
11.12	2.47	4.00	9.35	52	.....	6.26	10.27
10.30	2.27	3.47	9.22	47	ONEONTA.....	82	11.23
10.00	2.11	3.36	9.12	43	OTEGO.....	90	11.42
9.10	1.55	3.25	9.02	39	WELL'S BRIDGE..	95	11.54
8.40	1.34	3.10	8.49	34	UNADILLA....	99	11.64
8.05	1.10	2.54	8.34	28	SIDNEY.....	103	12.14
7.20	12.47	2.40	8.21	23	BAINBRIDGE....	108	12.26
7.15	12.42	2.32	8.17	22	AFTON.....	114	12.41
6.33	12.11	2.11	7.59	15	NINEVEH....	119	12.55
6.03	11.51	1.56	7.46	10	HARPERSVILLE...	120	1.00
5.45	11.38	1.46	7.38	7	TUNNEL.....	127	1.22
5.00	11.10	1.30	7.20	0	OSBORN HOLLOW..	132	1.37
					PORT CRANE....	135	1.46
					BINGHAMTON....	142	2.03
P. M.	P. M.	P. M.	A. M.	Leave	Arrive	P. M.	P. M.
						A. M.	A. M.

Trains Nos. 1, 2, 3, 4, 5, 10 and 11 run daily, Sundays excepted.

Train No. 6 leaves Binghamton Sunday nights, but not Saturdays.

PALACE SLEEPING COACHES on Trains 5 and 6 run between Albany and Binghamton.

“PALACE SLEEPING COACHES on Trains 5 and 6 run between Albany and Binghamton.”

EAST.]

**CHERRY VALLEY BRANCH**

[WEST.]

10	6	4	2	STATIONS.	1	3	5	9
A. M.	P. M.	P. M.	A. M.	Arrive COBLESKILL...	A. M.	P. M.	P. M.	P. M.
8.35	7.00	6.04	11.53	Leave 9.43	5.07	8.37	6.20	
8.10	6.45	5.49	11.39	HYNDSVILLE...	9.57	5.22	8.52	6.45
7.50	6.33	5.37	11.28	SEWARD...	10.08	5.37	9.04	7.05
7.25	6.18	5.22	11.14	SHARON...	10.22	5.52	9.19	7.30
6.40	...	4.55	10.50	CHERRY VALLEY	10.46	...	10.46	8.24
A. M.	P. M.	P. M.	A. M.	Leave	Arrive	A. M.	P. M.	P. M.

EAST.]

**NINEVEH BRANCH**

[WEST.]

6	4	2	STATIONS.	1	3	5
P. M.	P. M.	A. M.	Arrive	Leave	A. M.	P. M.
8.00	...	...	ALBANY...	7.40	...	
6.40	2.39	11.50	NINEVEH...	12.55	8.32	3.15
6.22	2.31	11.25	CENTRE VILLAGE...	1.03	8.41	3.27
5.52	...	10.55	OUAQUAGA...	...	8.56	3.47
5.42	2.10	10.42	WINDSOR...	1.21	9.06	3.59
5.00	1.45	10.00	JEFFERSON JUNCTION...	1.45	9.43	4.40
...	12.10	...	CARBONDALE...	3.20	...	
...	11.30	...	SCRANTON...	3.50	...	
P. M.	A. M.	...	Leave	Arrive	P. M.	A. M. P. M.

EAST.]

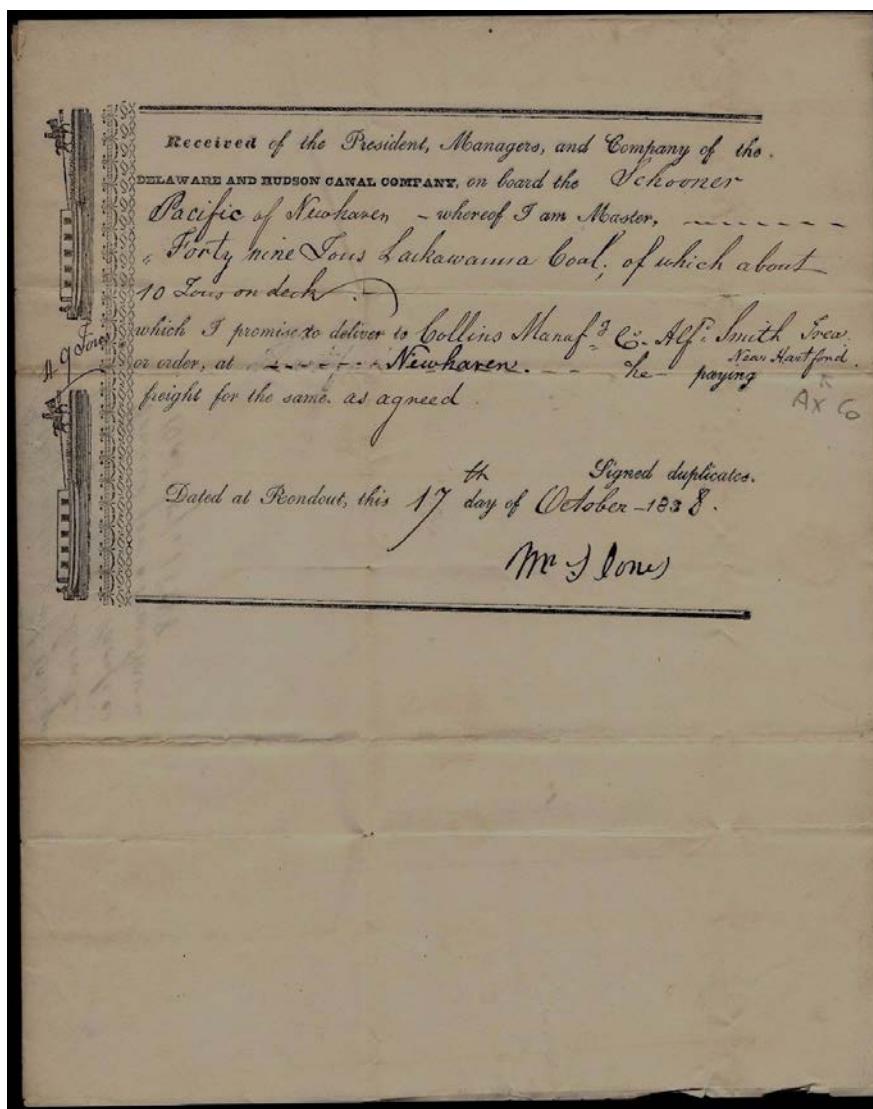
**SCHENECTADY BRANCH.**

[WEST.]

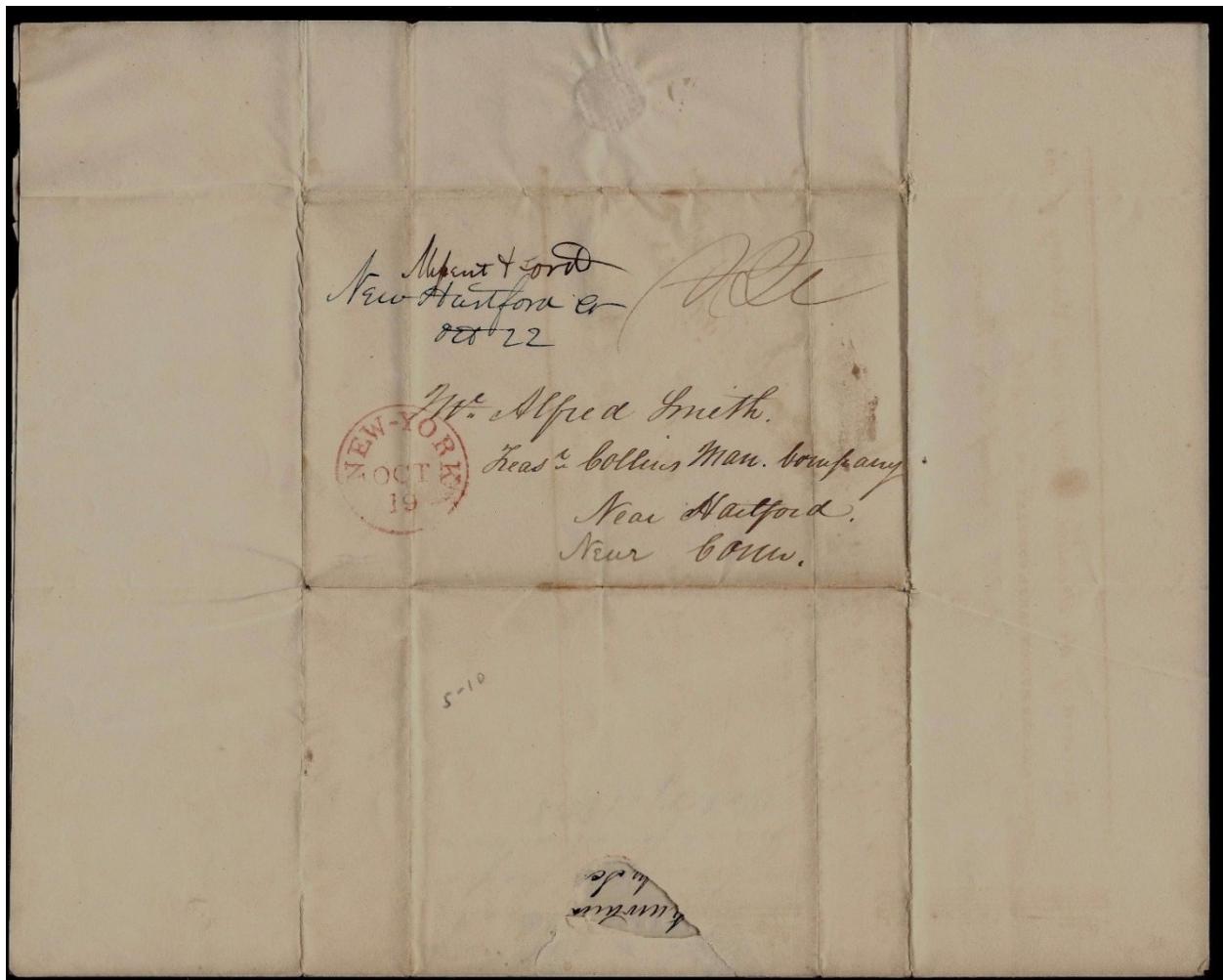
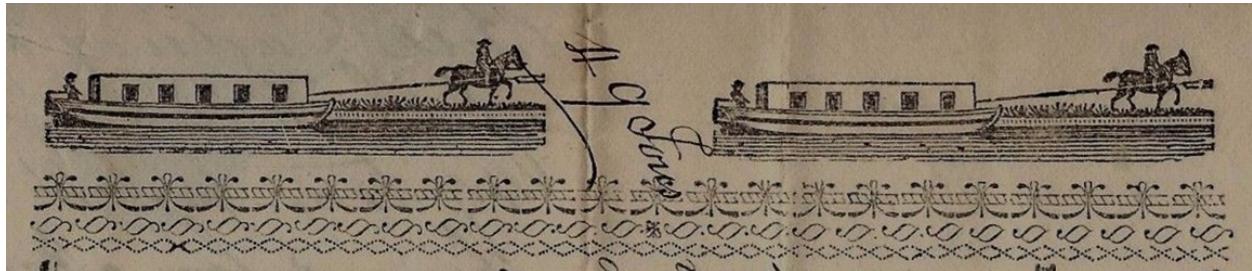
4	2	STATIONS.	1	5
P. M.	P. M.	Arrive	A. M. P. M.	
8.35	3.10	SARATOGA...	Leave	
7.42	1.26	SCHENECTADY...	...	
7.21	1.06	KELLEYS...	...	
7.06	12.51	DUANESBURGH...	...	
6.55	12.41	QUAKER STREET...	...	
P. M.	P. M.	Leave	A. M. P. M.	

2. The bill of lading shown below for a coal shipment to New Haven, CT, October 17, 1838, from Rondout, NY, was offered for sale on E-Bay on November 27, 2017, and brought to our attention by John V. Buberniak:

Stampless, folded letter, written October 17, 1838, Delaware and Hudson Canal Company, on board the Schooner Pacific of New Haven, Connecticut. Letter was sent to Alfred Smith, Treasurer of the Collins (Axe) Manufacturing Company, near Hartford, CT. However, as you can see on the address panel, the letter was mis-sent to "New" Harford. Hence it was forwarded back to its intended destination "Near" Hartford. Postmark is a red NEW-YORK circular date stamp with a rate mark.



Detail of the bill of lading shown above, showing drawings of canal boats being towed:



Bill Lading of cargo  
of La Chusana boat  
49 tons, - in Sch. Pacific  
bound for New Haven  
Oct. 17. 1838.

3. The D&H Office Building in Albany and its predecessor in New York City:

D&H building in New York, 1874:

On August 6, 1873, the D&H Managers authorized the erection of the new building which, upon completion was given the name of the Coal and Iron Exchange. It remained for years the principal executive and administrative offices of the D&H.

The D&H building was designed by Richard Morris Hunt.

April 30, 1874: the cornerstone of D&H building on Cortland Street in New York City was laid.

The building was located on Cortland Street at the southeast corner of Church Street in lower Manhattan (site then known as the Western Hotel property + two adjoining lots on the southeast corner of Church and Cortlandt Streets; all three lots for \$310,000). It was one of the first buildings that contributed substantially to the evolution of the skyscraper. The building was described as fire proof.

Building completed in 1876, and first occupied by the D&H on January 11, 1876.

On December 18, 2010, John V. Buberniak discovered on the Internet that a copy of the specifications for the building, designed by Richard Morris Hunt, was offered for sale by the Antiquarian Booksellers' Association of America for \$950. The seller described the book of specifications as follows:

“NY: Evening Post Steam Presses, 1873. First edition. Hardcover. 84 pages. 23 x 14.5 cm. Unique record of an early New York city landmark. The Delaware & Hudson Canal Company founded one of the most important rail lines and canal routes in the northeast, transporting from Pennsylvania to New York City. Its nine story headquarters designed by Hunt and located on Cortland Street at the southeast corner of Church Street in lower Manhattan, was one of the first buildings that contributed substantially to the evolution of the skyscraper. The volume of specifications likely printed for use of the firm and construction companies only, indicates the materials and immense detail of such a structure. Within the same five year period Hunt used similar methods for one of his best known works, The Tribune Building, for a time the tallest edifice in the city after the spire of Trinity Church. Hunt was the first American architect trained at the Ecole des Beaux-Arts. Tipped to the front blank is a manuscript document of R.G. Moulton, Secretary of Building Committee, charting the appraisement of rental value of office rooms in the new structure, dated 5 January 1874. The rear contains numerous tipped-in and loose floor plans on very brittle onion skin, marked in red ink and colored pencil, folded with separations and scattered chipping. Wear to backstrip extremities and corners.”

The D&H Building in New York City, photograph given on page 131 of *King's Handbook of New York City*, edited and published by Moses King; second edition, July 1893.

The building is described as follows in *King's Handbook of New York City*, edited and published by Moses King, 1897 (pp. 130-131):

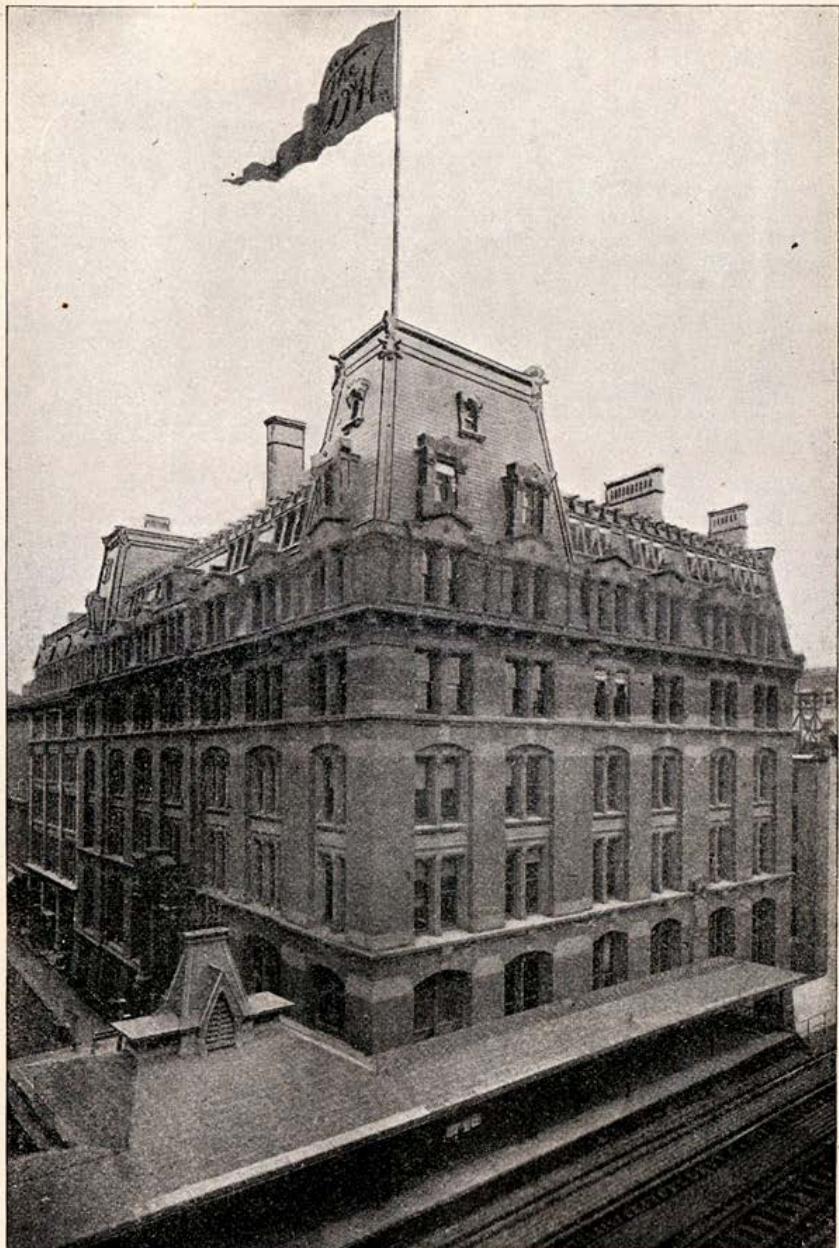
**The Delaware & Hudson Canal Company** is a corporation chartered by the State of New York in 1823, mainly to transport coal from the Pennsylvania coal-fields to New York. The canal was begun in 1825 and finished in 1828, and was twice enlarged, first in 1844 and again in 1862, to admit vessels of 150 tons capacity. It extends from Rondout, on the Hudson, to Port Jervis, on the Delaware, 59 miles; thence 24 miles up the Delaware Valley, to Lackawaxen; and thence 26 miles to the coal-region at Honesdale. This was one of the most important works of the great era of canal-building, which just preceded the rise of the railways. The capacity of the canal, with its equipments, is about 2,500,000 tons per annum.

The celebrated Gravity Road from Carbondale to Honesdale, over which millions of tons of coal are carried, was begun in 1827 and finished in 1829.

Between 1827 and 1829 the Canal Company built a railway from Honesdale to the coal-mines, and placed thereon the first locomotive that ever ran upon a railroad in the Western hemisphere. This pioneer engine, the *Stourbridge Lion*, was brought across from Liverpool on the packet-ship *John Jay*, in 1829, and passed to Honesdale, by river to Rondout, and thence by canal. In 1860 the company owned 108 miles of canal and 23 miles of railroad; in 1870 it leased in perpetuity the Albany & Susquehanna line; and in 1871 it leased the Rensselaer & Saratoga line and its branches. Subsequently it built a new line along the west side of Lake Champlain, from Whitehall nearly to Montreal, giving a straight route from Albany to the metropolis of Canada and traversing a country of rare beauty and diversity of scenery. Trains run from New-York City to Montreal, 384 miles, without change, in less than 12 hours, reaching Albany over the New-York Central & Hudson-River Railroad. The world-renowned Ausable Chasm is reached from Port Kent, on the Champlain Division.

Apart from its enormous freighting business, in coal and other commodities, the Delaware & Hudson Railroad system has a very large and lucrative tourist and summer-travel business. It affords the best route between New York and other southern points, and Montreal, Ottawa or Quebec, the historic old Canadian capitals; and also to Lake George and Lake Champlain, with their exquisite scenery of land and water, mountain, island and beach, and the famous Hotel Champlain, at the station of the same name, three miles south of Plattsburg; to the heart of the Adirondacks, with stages running from its stations to Blue Mountain-Lake, Long Lake, Schroon Lake, and Keene Valley, and by connecting line to Saranac Lake to the remote interior of the Adirondack wilderness, by the Chateaugay Railroad from Plattsburg; to Ticonderoga, Crown Point, and Plattsburg; to Saratoga, the queen of summer-resorts; and to Rutland and other interesting points in southern Vermont. The Delaware & Hudson lines southwestward from Albany reach the famous resorts of Howe's Cave, Sharon Springs, and Cooperstown, on Otsego Lake; and pass downward to Binghamton, and southward into the valley of Wyoming.

The Delaware & Hudson Canal Company's building is an immense and imposing fire-proof structure, generally known as the Coal and Iron Exchange. It is on Cortlandt Street, at the southeast corner of Church Street. It is not an "Exchange" building, excepting in name; but it is the property of the Delaware & Hudson Canal Company, for whom it was built in 1874-76, and whose main offices are located therein. Here centres the executive administration of the line, and here is the focal point of its enormous and lucrative coal-trade. The great building was designed by Richard M. Hunt, and to-day is one of the finest office-buildings in the city, having all the modern appliances and conveniences, and being occupied by an interesting group of administrative and executive headquarters.



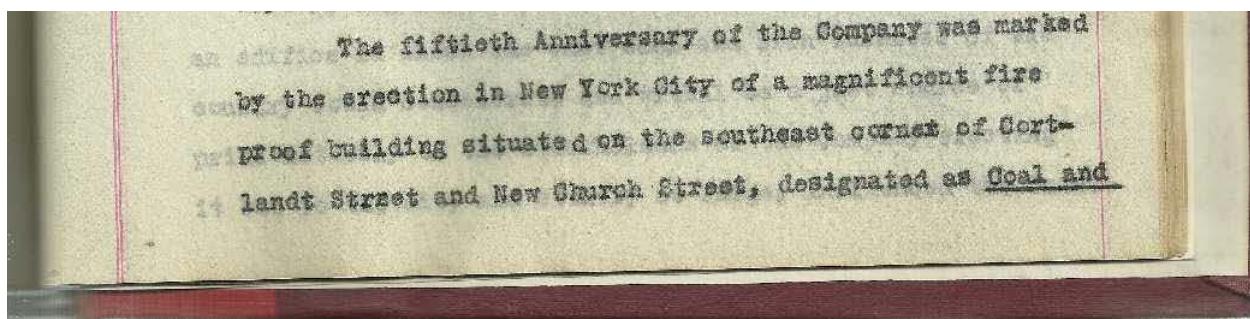
DELAWARE & HUDSON CANAL COMPANY.  
COMPANY'S BUILDING, CALLED "THE COAL AND IRON EXCHANGE," CORTLANDT AND CHURCH STREETS.

Here is the line engraving of the D&H building at 21 Cortlandt Street that is given in *Century of Progress* on page 233:



New York office, 21 Cortlandt street, 1876-1906.

*Hollister*, pp. 197-203 (there are two pages numbered 202), gives the following information on the Coal and Iron Exchange Building:



Iron Exchange Building. The foundation was laid in 1874; it was completed and occupied in January 1876. Constructed from Nova Scotia Sand Stone, Granite, Baltimore pressed brick, American marble and Iron and Portland cement, no pains or expense has been spared to make it the nearest fire-proof, best built and most thoroughly lighted, heated and ventilated office building of a large dimensions that has ever been erected upon the Island of Manhattan. Its completeness and convenience as a whole, as well as in detail combined with its architectural effects, which are created more by the varied effects of different materials, and by the large dimensions of the exterior of the structure, than by any superfluous ornamentations, exterior or interior, will gain for the building the favor of the public.

The lot occupied by the building is 143 ft. 10 in. on Cortlandt Street, and 105 ft. 6 in. on New Church Street, with an L of 17 x 70 ft. on its extreme southeasterly corner. The whole ground is built upon, with the exception of a court yard 20 x 30 ft, in about the centre of the rear line, and a smaller yard on the east line of the property.

Up until this time, the Delaware and Hudson Canal Company, with all its elements of independence, had no safe permanent place to deposit and preserve the valuable books, deeds, maps, documents, records and papers that had accumulated necessarily since the organization of the Company in 1825.

To furnish such a fire-proof building and to construct an edifice in which the vast coal and iron business of the country could concentrate and withal be a just source of pride not only to the Stockholders of the Company erecting it but to the city and country at large, influenced the Board

of Managers of the Delaware and Hudson Canal Company to make such an expenditure as was necessary for its erection. The cost of the structure was equal or even greater than the original cost of the Railroad and Canal between Carbondale and Rondout, yet the importance of its erection was deemed more essential to the needs of the Company at this time than was the construction of the former works of transportation in 1826 to 1828 to the public. The following record was placed under the Corner-stone.

DELAWARE & HUDSON CANAL CO.

This Building was erected by the Delaware and Hudson Canal Company and this record deposited under the corner-stone April 30th 1874.

MANAGERS & OFFICERS OF THE DELAWARE AND HUDSON CANAL COMPANY.

BOARD OF MANAGERS.

President	Charles H. Talbot	James R. Taylor
Asst. President	Abriel A. Low	Thomas Dickson
Asst. President	Robert L. Kennedy	John Jacob Astor
Asst. President	James H. Halsted	Thomas Cornell
Vice Pres.	LeGrand B. Cannon	W. J. Hoppin
Vice Pres.	George Gabit Ward	J. Pierpont Morgan
Vice Pres.	F. M. Clyphant	

President, Thomas Dickson, Beranton, Pa.	Asst. President, H. V. Clyphant, (Deceased)
Asst. President, H. V. Clyphant, (Deceased)	Asst. President, H. V. Clyphant, (Deceased)
Treasurer, James E. Hartz, New York City	Treasurer, James E. Hartz, New York City
Secretary, George L. Haight, New York City	Secretary, George L. Haight, New York City
Sales Agt., Rodman G. Moulton, New York City	Sales Agt., Rodman G. Moulton, New York City
General Manager, Cos F. Young, Honesdale, Pa.	General Manager, Cos F. Young, Honesdale, Pa.
Gen. Agt. Real Est. Dept., E. W. Weston, Providence,	Gen. Agt. Real Est. Dept., E. W. Weston, Providence,
Supt. Coal Dept., A. H. Vandling, Providence, Pa.	Supt. Coal Dept., A. H. Vandling, Providence, Pa.
Supt. R.R. Dept., R. Manville, Carbondale, Pa.	Supt. R.R. Dept., R. Manville, Carbondale, Pa.
Supt. Canal Dept., A. M. Atkinson, Honesdale, Pa.	Supt. Canal Dept., A. M. Atkinson, Honesdale, Pa.
Supt. Rondout Dept., A. Osterhout,	Supt. Rondout Dept., A. Osterhout,
Sales Agent S. West, Dept. Joseph J. Albright.	Sales Agent S. West, Dept. Joseph J. Albright.

## ALBANY &amp; SUSQUEHANNA AND RENSSELAER &amp; SARATOGA R.R. DEP.

General Superintendent: H. A. Fonda, Albany, N. Y.

Chief Engineer: C. W. Wendt, Albany, N. Y.

## Railroad Dep't. of the State of New York.

## NEW YORK AND CANADA RAILROAD DEPARTMENT.

President and Superintendent: Isaac V. Baker, Comstock, N.Y.

## Railroad Department 1874 U. S. N. BOSTON.

## BUILDING COMMITTEE.

Robert L. Kennedy, Chairman. John Jacob Astor, James R. Taylor

Rodman G. Moulton, Secretary, Richard M. Hunt, Arch.

E. E. Raht, Superintending Arch.

The Company was originally organized March 8th 1825 and the following comprises the list of Officers and managers holding office at different periods from that time to the present:

Presidents: 1825, Philip Home. 1826, John Bolton,  
1832, John Wurts 1858, Geo. T. Olyphant,  
1869, Thomas Dickson.

Assistant Presidents: 1874, Harwood P. Olyphant.

Vice Presidents: 1845, Isaac L. Platt, 1849 John Ewan  
1851, Wm. Musgrave, 1857, Robt. Scott-  
er, 1866, Thomas Dickson.

Treasurers: 1825, John Bolton, 1826, Samuel Flewelling,  
1832, John H. Williams, 1845, Isaac N. Sey-  
mour, 1869, Charles P. Hartt, 1873,  
James C. Hartt.

Secretaries: 1842, Isaac N. Seymour, 1848, Gilead A.  
Smith, 1855, James C. Hartt, 1866,  
Richard H. Noddyas, 1871, Daniel Wilson  
1873, George L. Haight.

Sales Agents: 1866, James C. Hartt, 1873, Rodman G. Moul-  
ton,

Sales Agent Western Dept: 1869, Joseph J. Albright.

General Manager: 1834 Amaria G. Smith

1835 John L. Aspinwall - Joseph Bayley

1836 Coe F. Young, James Taylor

1837 Coe F. Young, James Taylor

Mining Superintendent: 1836 E. Weston - 1874 A.H. Vandling,

Railroad Department Superintendent: 1836 R. Manville.

Canal Superintendent: 1866 Coe F. Young - 1869 A. N. Atkinson.

Rondout Department Superintendent: 1873 A. H. Vandling - 1874 A. Osterhout.

Real Estate Department: 1874 E. W. Weston,

Superintendent, Albany & Susquehanna and Rensselaer & Saratoga

Railroad Department: 1873 H. A. Fonda.

General Superintendent: 1873 C. W. Wentz.

Chief Engineer, New York and Canada R. R. Department: 1873 Isaac V. Baker, President and Superintendent.

Managers:

1825 Garret A. Abeel	- 1832 John J. Astor, Jr.
1826 John L. Aspinwall	- 1834 Joseph Bayley
1825 John Bolten	1831 James Bryant
1823 Wm. Branford	1834 James Bayley
1841 Henry Bruevert, Jr.	1835 Lynde Catlin
1826 Wm. Calder,	1835 Edward Colman
1837 Don Alonso Cashman	1836 Lt. B. Cannon
1823 John J. Crane	1838 Thomas Cornell
1835 Robert Crane	1838 Thomas Dickson
1834 John Ferguson	1835 Robert Dyson
1832 Daniel B. Fearing	1836 C. D. Fraht,
1825 Philip Hone	1835 John Hunter
1825 Abraham Hasbrouck	1831 John Hitchcock
1831 William Halsted	1838 William J. Reppen
1826 William H. Ireland	1838 Robert L. Kennedy
1835 Rufus L. Lord,	1838 William E. Lee,
1841 Daniel Lord, Jr.	1842 Jacob R. LeRoy,
1857 Abiel Low,	1873 J. Pierpont Morgan
1846 Howard Mott	1842 Lord Nash
1837 Joseph Otis	1852 George T. Olyphant
1873 Robert W. Olyphant	1825 Hezekiah Pierrepont
1832 Allison Post	1834 Isaac L. Platt
1855 Daniel Parish	1825 Wm. W. Russell.
1826 Benjamin W. Rogers	1833 Samuel Reynolds
1832 James Ruthven	1840 John Rankin
1853 Robert Ray	1833 Philemon Starr

1834 Joseph Sands 1841 Aquilla G. Stout  
 1857 Samuel B. Schiffelin  
 1869 John Schenck 1870 Isaac N. Seymour  
 1835 Jonathan Thompson 1826 Thomas Tileston  
 1826 Henry Thomas 1833 Knowless Taylor  
 1845 Charles N. Tulbot 1864 James R. Taylor  
 1830 Myndert VanSchaick  
 1838 George D. Wickham 1825 Maurice Wurts  
 1826 Samuel Whittemore 1831 John Wurts  
 1831 William Worrall 1831 William Wheelwright  
 1852 Edward J. Woolsey 1858 John S. Wolff.  
 1873 George C. Ward 1842 Henry Young.

The Canal from Honesdale to Rendout was commenced July 13, 1835 and was completed in October 1838. The first enlargement was completed in 1834, the second was completed in 1852. The tonnage of the first boats on the Canal was 25 tons; of the second 40 tons; present tonnage 125 to 148. First coal shipped from the mines in Pennsylvania in 1829, and was shipped in 1837 and 1838. The first locomotive

AMOUNT OF COAL SHIPPED.

Year	Amount
1829	7000
England by this Company	45000
1830	England by Rendout
1831	54000
Allen, Assistant Engineer	34600
1832	111777
1833	43700
9, 1833 on board Wm. Wurts	arrived in New York
1834	90000
1835	103631
17 May 1836 was paid	amount, and arrived
1836	115537
June July 1836 1837	78307 imported by Canal and
1838	1223500
Received at Honesdale	148470 on the 20th of August
1840	193270
1841	205255
1842	237605
Made the trip	251005 "bridge line" and
1843	272435
Greenbridge, England	320000 "bridge line" and
1844	326205
1845	330000 Pennsylvania.
1846	330000
1847	330000
On the 24th of	Company leased in
1848	437500
1849	454240
Subsequently the amount	453559
1850	473478
1851	473478
1st of May 1852	497039
1853	494327
1853	494327
1854	433406

In Nov.	1855	1855	565460	A line from Wilkes-Barre
	1856		499650	
in this State	1857	1857	482677	and Honesdale, which, when
	1858		348782	completed with
Completed with	1859	1859	591000	from 800 and 700 miles of
	1860		499568	railways in 1859 to this
	1861	1861	726644	100 miles of 1862
	1862		644100	
	1863		828150	
	1864		262150	
	1865		769699	Locomotives built as follows:
	1866		1591674	
	1867		1597487	1866 Feltner and Son
	1868		1901276	1867
	1869		1623391	General Iron Works, N.Y.
	1870		2518073	1870 Feltner and Son
	1871		2011232	1871 New Haven Iron Co.
	1872		2930757	1872 Feltner and Son, N.Y.
	1873		2758598	1873

Stone, Locomotives, 1870, page 77.

The Railroad from Honesdale, Pa., to the mines was commenced in 1827 and completed in 1829. The first locomotive that ran upon a railroad on this continent was imported from England by this Company, was ordered in England by Horatio Allen, Assistant Engineer; was shipped from Liverpool April 8, 1829 on board Packet Ship "John Jay" arrived in New York 17 May 1829; was sent up the river to Rondout, and arrived there July 4th 1829, from thence was transported by Canal and arrived at Honesdale July 23, 1829 and on the 8th of August 1829 made the trial trip. This locomotive was built at Stourbridge, England; was named the "Stourbridge Lion" and the boiler is now in use at Carbondale, Pennsylvania.

On the 24th of February 1870, this Company leased in perpetuity the Albany and Susquehanna Railroad; and on the 1st of May 1871, leased the Rensselaer and Saratoga Railroad, with its branches.

is now engaged in constructing a line from Whitehall in this State on the west side of Lake Champlain, which, when completed will give this Company between 600 and 700 miles of railway; in addition to this, they have 186 miles of iron railway in their mines.

Contracting parties for this Building as follows:

The Wires  
Masons ..... A. J. Felter and Son  
Carpenters ..... G. Van Nostrand  
Iron ..... Architectural Iron Works, N.Y  
Iron Floor Beams ..... W. H. Wallace and Co.  
Agents for Union Iron Co.  
Stone Quarries ..... Buffalo, N. Y.  
Granite ..... J. G. Batterson.  
Stone Trimmings ..... Daniel McMaster.

The data reported above by Hollister on (1) the management of the D&H from 1829 up to 1880, and (2) shipments of coal from the mines from 1829 to 1880 were among the data that were placed under the Corner-stone of the Corn and Iron Exchange Building on April 30, 1874 (foundation stone laid 1874; completed and opened January 1876). Those same data, plus updates for the period 1874 to 1884, were reported by Alfred Mathews in his monumental *History of Wayne, Pike and Monroe Counties, Pennsylvania*, published by R. T. Peck & Co. in Philadelphia in 1886.

Here are those data, as presented by Alfred Mathews, on pp. 247-48 of his tri-county history:

Amount of coal shipped to market  
by the D&H in the period 1829-  
1884:

Years.	Tons.	Years.	Tons.
1829.....	7,000	1857.....	480,677
1830.....	43,000	1858.....	348,789
1831.....	54,000	1859.....	591,000
1832.....	84,600	1860.....	499,568
1833.....	111,777	1861.....	726,644
1834.....	43,700	1862.....	644,100
1835.....	90,000	1863.....	828,150
1836.....	103,861	1864.....	852,130
1837.....	115,387	1865.....	759,699
1838.....	78,207	1866.....	1,391,674
1839.....	122,300	1867.....	1,507,487
1840.....	148,470	1868.....	1,991,870
1841.....	192,270	1869.....	1,626,391
1842.....	205,253	1870.....	2,318,073
1843.....	227,605	1871.....	2,011,333
1844.....	251,005	1872.....	2,930,767
1845.....	273,435	1873.....	2,752,596
1846.....	320,000	1874.....	2,399,417
1847.....	386,203	1875.....	3,053,817
1848.....	437,500	1876.....	1,997,545
1849.....	454,240	1877.....	1,893,315
1850.....	432,339	1878.....	2,045,041
1851.....	472,478	1879.....	3,412,063
1852.....	497,839	1880.....	3,047,594
1853.....	494,327	1881.....	3,661,792
1854.....	438,407	1882.....	3,719,322
1855.....	565,460	1883.....	4,097,218
1856.....	499,650	1884.....	3,986,877

Following is a list of the managers, officers and department superintendents of the company from 1825 to 1885:

Presidents: 1825, Philip Hone; 1826, John Bolton; 1832, John Wurts; 1858, George T. Olyphant; 1869, Thomas Dickson; 1884, Robert M. Olyphant.

Vice-Presidents: 1845, Isaac L. Platt; 1849, John Ewen; 1851, William Musgrave; 1857, Robert Souter; 1866, Thomas Dickson; 1882, Robert M. Olyphant; 1884, Coe F. Young; 1885, Le Grand B. Cannon.

Assistant Presidents: 1874, Harwood V. Olyphant; 1876, Robert M. Olyphant.

Managers: 1825, Garrett B. Abeel; 1867, John J. Astor, Jr.; 1867, John L. Aspinwall; 1825, John Bolton; 1831, James Bryar; 1832, William Branford; 1834, Joseph Bayley; 1841, Henry Brevoort, Jr.; 1825, Lynde Catlin; 1826, William Calder; 1833, Edward Colman; 1837, Don Alonzo Cushman; 1860, Le Grand B. Cannon; 1862, John J. Crane; 1868, Thomas Cornell; 1835, Robert Dyson; 1866, Thomas Dickson; 1834, John Ferguson; 1852, Daniel B. Fearing; 1866, O. De F. Grant; 1825, Philip Hone; 1825, John Hunter; 1825, Abraham Hasbrouck; 1831,

John Hickok; 1831, William M. Halstead; 1838, William C. Hickok; 1841, Silas Holmes; 1842, Irad Hawley; 1844, William S. Herriman; 1845, Cyrus Hickok; 1859, James M. Halsted; 1868, W. J. Hoppin; 1826, William H. Ireland; 1858, Robert L. Kennedy; 1825, Rufus L. Lord; 1833, William E. Lee; 1841, Daniel Lord, Jr.; 1842, Jacob R. Leroy; 1857, Abiel A. Low; 1873, J. Pierpont Morgan; 1846, Howard Mott; 1848, Lord Nash; 1837, Joseph Otis; 1852, George T. Olyphant; 1873, Robert M. Olyphant; <sup>1</sup> 1825, Hezekiah Pierrepont; 1832, Allison Post; 1834, Isaac L. Platt; 1855, Daniel Parish; 1825, William W. Russell; 1826, Benjamin W. Rogers; 1832, Samuel Reynolds; 1832, James Ruthven; 1840, John Rankin; 1853, Robert Ray; 1833, Philemon Starr; 1834, Joseph Sands; 1841, Aquilla G. Stout; 1857, Samuel B. Schieffelin; 1859, John Schenck; 1870, Isaac N. Seymour; 1825, Jonathan Thompson; 1826, Thomas Tileston; 1826, Henry Thomas; 1833, Knowles Taylor; 1845, Charles N. Talbot; 1864, James R. Taylor; 1830, Myndert Van Schaick; 1825, George D. Wickham; 1825, Maurice Wurts; 1826, Samuel Whittemore; 1831, John Wurts; 1831, William Worrell; 1831, William Wheelwright; 1852, Edward J. Woolsey; 1858, John D. Wolfe; 1873, George C. Ward; 1842, Henry Young.

The following managers have been elected since the foregoing list was compiled:

1875, Robert S. Hone and James Roosevelt; 1877, Levi P. Morton; 1880, Adolphus Hamilton and Abram H. Van Nest; 1881, Hugh J. Jewett and David Dows; 1884, Benjamin H. Bristow; 1885, John A. Stewart.

Treasurers: 1825, John Bolton; 1826, Samuel Flewelling; 1832, John H. Williams; 1845, Isaac N. Seymour; 1869, Charles P. Hartt; 1873, James C. Hartt.

Assistant Treasurer: 1885, Charles A. Walker.

Secretaries: 1842, Isaac N. Seymour; 1848, Gilead A. Smith; 1855, James C. Hartt; 1866, Richard H. Nodyne; 1871, Daniel Wilson; 1873, George L. Haight; 1883, F. Murray Olyphant.

General Sales Agents: 1866, James C. Hartt; 1873, Rodman G. Moulton; 1885, James C. Hartt.

General Sales Agent, Western and Southern Sales Department: 1869, Joseph J. Albright.

General Managers: 1869, Coe F. Young; 1885, Horace G. Young.

Assistant General Manager: 1883, Horace G. Young.

Coal Department Superintendents: 1866, E. W. Weston; 1874, A. H. Vandling.

Pennsylvania Division Superintendent: 1866, R. Manville.

Canal Superintendents: 1866, Coe F. Young; 1869, A. M. Atkinson; 1884, L. O. Rose.

<sup>1</sup> Retired in 1874; was re-elected in 1883.

Rondout Department Superintendents: 1873, A. H. Vandling; 1874, A. Osterhoudt; 1877, S. S. Smith.

General Agent Real Estate Department: 1874, E. W. Weston.

Superintendent Albany and Susquehanna and Rensselaer and Saratoga Railroad Department: 1873, H. A. Fonda.

Chief Engineer Albany and Susquehanna and Rensselaer and Saratoga Railroad Department: 1873, C. W. Wentz.

President and Superintendent New York and Canada Railroad Department: 1873, Isaac V. Baker.

On January 1, 1875, the Northern Railroad Department was created, consisting of the Albany and Susquehanna Railroad and branches, Rensselaer and Saratoga Railroad and branches, and the completed portion of the New York and Canada Railroad. It was divided into two divisions, viz.: Saratoga Division, embracing the Rensselaer and Saratoga Railroad and branches, and the New York and Canada Railroad and branches; and the Susquehanna Division, embracing the Albany and Susquehanna Railroad and branches.

The superintendents placed in charge were as follows:

Saratoga Division, Theodore Voorhees, Troy, N. Y.; Susquehanna Division, C. D. Hammond, Albany, N. Y.

November 1, 1885, both divisions were placed under the charge of C. D. Hammond, as superintendent of the Northern Railroad Department.

Chief Engineers Northern Railroad Department: 1875, C. W. Wentz; 1885, A. J. Swift.

The managers and officers of the company at present are as follows:

*Board of Managers.*—Abiel A. Low, James M. Halsted, Le Grand B. Cannon, James R. Taylor, John Jacob Astor, Thomas Cornell, Robert S. Hone, James Roosevelt, Abraham R. Van Nest, Hugh J. Jewett, David Dows, Robert M. Olyphant, Benjamin H. Bristow.

President, Robert M. Olyphant, New York City; Vice-President, Le Grand B. Cannon, New York City; Treasurer and General Sales Agent, James C. Hartt, New York City; Assistant Treasurer, Charles A. Walker, New York City; Secretary, F. Murray Olyphant, New York City; General Manager,<sup>1</sup> Horace

<sup>1</sup>Coe F. Young, appointed general manager in 1869, held that office until July, 1885, when he resigned, and his son, Horace G. Young, appointed assistant general manager in 1882, was, on the 30th of September, 1885, promoted to fill the vacancy.

G. Young, Albany, N. Y.; General Agent of Real Estate Department, E. W. Weston, Providence, Pa.; Superintendent of Coal Department, A. H. Vandling, Providence, Pa.; Superintendent of Pennsylvania Division, R. Manville, Carbondale, Pa.; Sales Agent Southern and Western Department, Joseph J. Albright, Scranton, Pa.; Superintendent Canal Department, L. O. Rose, Honesdale, Pa.; Superintendent Rondout Department, S. S. Smith, Rondout, N. Y.; General Sales Agent Western and Southern Sales Department, Joseph J. Albright, Scranton, Pa.; Superintendent Northern Railroad Department, C. D. Hammond, Albany, N. Y.

The result of the business of the company for the year ending December 31, 1884, one of general depression, was as follows:

	Tons.	Tons.
Coal produced at the mines of the company...	3,362,679.16	
Transported for others...	623,697.04	
 Total tons.....	 3,986,377.00	
The gross receipts were...	\$16,379,021.06	
Expenses.....	11,542,871.46	
		\$4,829,149.60
Less taxes, interest and rentals.....		3,341,055.53
Leaving net earnings.....		\$1,488,094.07
Or a fraction over 6½ per cent.		

A condensed balance sheet for the same year exhibited the following figures:

<i>Assets.</i>	
Canal.....	\$6,339,210.49
Railroad and equipment.....	6,468,683.96
Real estate.....	9,325,365.39
Mine improvements.....	2,388,709.02
Mine fixtures and equipment.....	403,708.29
Boats, barges and steamboats.....	617,889.09
Coal-yards and fixtures.....	172,889.94
Lackawanna and Susquehanna Railroad	1,022,938.15
Cherry Valley, Sharon and Albany Railroad.....	300,000.00
New York and Canada Railroad.....	3,597,074.48
Lackawanna Palace Car Company.....	28,300.00
Mechanicville and Fort Edward Railroad.....	51,927.88
Schenectady and Mechanicville Railroad.....	211,527.85
Telegraph lines.....	14,734.80
Supplies on hand.....	1,611,253.96
Coal on hand.....	892,804.36
Advances to leased lines.....	1,502,789.59
Miscellaneous assets, viz.:	
Bonds.....	148,608.59

Coal and Iron Exchange Building, 21 Courtland Street, built in 1876; sold in 1906 and the D&H rented space at 32 Nassau Street. The railroad was administered from Albany. On September 1, 1962 the Company's entire staff was moved to the Albany building. Shown below is the D&H Office Building in Albany, NY:

*The Delaware and Hudson Railroad Bulletin*, November 1, 1931, pp. 328-329:



#### Additions for Volume XIII:

1. A bronze marker was placed in the Washburn Street Cemetery, Scranton, in November 2017 to mark the gravesites of 54 of the men and boys who were asphyxiated at the Avondale Colliery on September 6, 1869. An article on the placement of that marker was a page one story in the January-February 2018 issue of *Ninna*. Here is that article:

# After 148 Years- A Fitting Tribute For Avondale Victims



The bronze marker is now in place at the Washburn Cemetery

By Torry Watkins

November 2017, saw the placement of a bronze marker at the gravesites of 54 of the men and boys who were asphyxiated in the worst mining disaster in Anthracite Coal history. In all, 110 men and boys lost their lives to a fire at the Avondale Colliery near Plymouth, Pennsylvania, on September 6, 1869. An additional four are buried nearby in family plots.

The resting place of all 58 is the Washburn Street Cemetery in West Scranton, Pennsylvania. Earlier in its history, it was called simply the Welsh Cemetery, and it is believed to be the largest Welsh cemetery outside of Wales. Professor William Jones of Cardiff University has written extensively on the history of the space, and paraphrasing the English poet Rupert Brooke, he movingly calls it "A Foreign Field, Forever Welsh."

Most of the miners' graves never had stone markers, and for those that did, only seven

teen stones have survived to this day. Our committee put out a call for funds to place the bronze marker, and many Ninnau readers responded, as well as members of affiliated Welsh organizations and other individuals. Some contributions arrived accompanied by touching personal testaments written by persons with memories of loved ones who were lost in similar accidents.

Our committee extends its most sincere thanks to everyone who made this project possible. The ongoing support of staff at the Lackawanna Historical Society and Washburn Street Cemetery is especially appreciated.

These men and boys of Avondale are anonymous no more. With this simple tribute we acknowledge them for their labors and their sacrifice. We who have reaped the benefits of the Industrial Revolution in North America remember the forbears that made so much of this possible.

## Additions for Volume XIV:

1. Maintenance of Way Whistle, Pennsylvania Division, D. & H. C. Co.

Maintenance of Way Whistle:  
"Great object. It would have been used by the foreman in charge to direct attention as to movement of equipment and on-coming trains in the proximity of the work area." John V. Buberniak, October 5, 2017



#### *Maintenance of Way Whistle*

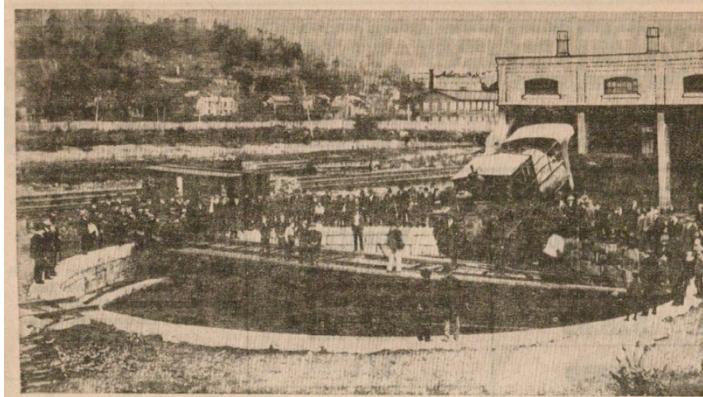
Whistle that belonged to Anthony Neutts, Carbondale, and which was donated to the Carbondale Historical Society on October 4, 2017 by Carbondale City Councilman, Jerry Arnese (Anthony Neutts was Jerry Arnese's wife's grandfather).

## Additions for Volume XV:

1. *Wilkes-Barre D&H Yard and Roundhouse, 1967.* Photo presented on Facebook on March 25, 2017.



2. The turntable at Honesdale: photo with very good caption, as published in *The Wayne Independent* of Tuesday, October 8, 1974, p. 19. An enlarged version of the caption on this photograph is given below.



19-The Wayne Independent, FALL FESTIVAL, Honesdale, Pa., Tuesday, Oct. 8, 1974

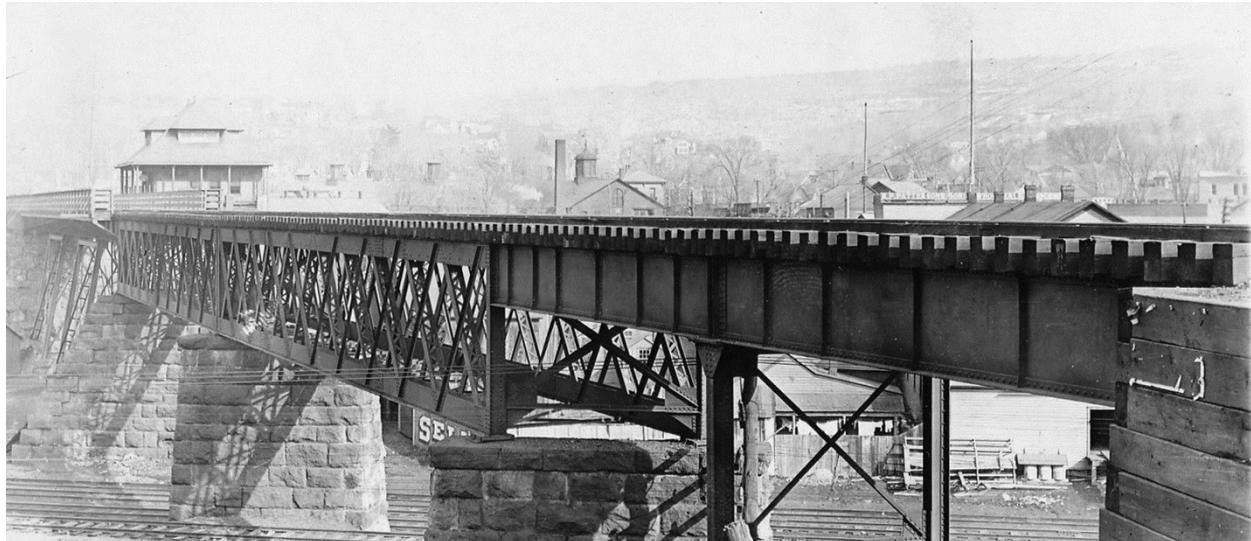
The above vintage photograph shows an upended locomotive in the old D & H Roundhouse, Honesdale, which was located in the early 1900's where Moore Company is now situated. In the Wednesday, Oct. 13, 1900 edition of The Wayne Independent the first recorded mishap at the roundhouse appeared: "The hostler at the D & H Roundhouse attempted to back Locomotive No. 215 further into the building on Sunday morning and it is supposed that he turned the lever the wrong way and could not reverse it in time to prevent the forward trucks from going into the turntable pit. The rear wheels rested on the wall. The hostler was in the cab when the accident happened. The Carbondale wrecking crew with Master Mechanic Rennie in charge arrived about 3 o'clock and it was early Monday morning when the men finished the work and returned to Carbondale. Many people visited the scene of the accident during the day and evening." Willow Avenue and the former BannerSlipper Co. building may be seen in the background.

The above vintage photograph shows an upended locomotive in the old D & H Roundhouse, Honesdale, which was located in the early 1900's where Moore Company is now situated. In the Wednesday, Oct. 13, 1900 edition of The Wayne Independent the first recorded mishap at the roundhouse appeared: "The hostler at the D & H Roundhouse attempted to back Locomotive No. 215 further into the building on Sunday morning and it is supposed that he turned the lever the wrong way and could not reverse it in time to prevent the forward trucks from going into the turntable pit. The rear wheels rested on the wall. The hostler was in the cab when the accident happened. The Carbondale wrecking crew with Master Mechanic Rennie in charge arrived about 3 o'clock and it was early Monday morning when the men finished the work and returned to Carbondale. Many people visited the scene of the accident during the day and evening." Willow Avenue and the former BannerSlipper Co. building may be seen in the background.

**Additions for Volume XVII:**

1. NYO&W photographs, the Scranton Division. The four photographs shown below are of NYO&W operations in the Lackawanna Valley. They were offered for sale on E-Bay on November 15, 2017, and were brought to our attention by John V. Buberniak.

1. O&W Trestle, Carbondale, showing O&W Passenger Station



2. O&W Trestle, Carbondale, Showing Siding to O&W Freight Station



3. O&W Passenger Station, Dickson City, PA



4. O&W Operations, Mayfield, PA



## Additions for Volume XVIII:

1. "Story of VonStorch Breaker" by Edward Hopkins. Reprinted here from p. 101 of *New York, Ontario & Western Railway Scranton Division* by Joe Bux and Ed Crist, 1985, p.101:

### Story of VonStorch Breaker

by Edward Hopkins

The VonStorch Breaker was the main preparation plant of the Penn Anthracite Collieries Company and was located on Nay Aug Avenue off Green Ridge Street in North Scranton at a point directly opposite Putnam Street. This breaker prepared for market the mine-run coal from the following mine operations: Capouse Shaft, Capouse Slope, VonStorch Slope, Harry Taylor Slope, Johnson Shaft, Johnson Slope, Ontario Tunnel, Sturges Shaft, Blue Ridge Tunnel, Raymond Shaft, and Hackley Slope. All the coal from these operations with the exception of VonStorch Slope was loaded into railroad cars and transported to the breaker for processing.

The breaker was built in the period 1926-27 and was as modern and efficient in preparing coal as was possible, utilizing the modern techniques in the cleaning equipment to produce a "slate free" commercial product. In the careful handling of coal in the preparation process it came close to being the most nearly perfect breaker ever built in the anthracite field. Inclined chutes for the movement of coal were eliminated wherever possible. Coal movement was on a horizontal plane by use of shaker chutes. The only exception to this practice was the use of four short chutes to deliver the coal from the feed shakers to the separating or cleaning units. At the head of the breaker was installed the largest rotary mine car dump in the anthracite field, capable of dumping the contents of six mine cars at one time.

The general plan in the layout of the breaker was to eliminate as far as possible the excessive breakage of coal. The use of loading pockets for egg, stove and chestnut sizes was done away with for the reason that loading coal from pockets resulted in breakage, due to faulty telegraph chutes which became so from wear and tear plus the abrasional frictional effect on coal forcing its way through loading gates, all of which combined to produce breakage and culm that had to be removed through lip screens installed at the loading gate and returned to the breaker.

In lieu of pockets, therefore, the VonStorch Breaker loaded the prepared sizes (egg, stove and chestnut) from the final sizing shakers directly into the railroad car by means of conveyor belt boom loaders which insured a cleanly loaded car free from breakage and dirt. In efficient preparation practice the policy was always to attempt to obtain the highest possible yield of the so-called higher priced coals from the run of mine product, and efficient roll practice and breakage elimination played a large role in seeking such ends.

The main breaker contained four 13-foot diameter Chance Cones, together with eight sets of shaker screens to dewater the cleaned coal and salvage the sand for further use. At this point it is necessary to describe just how a Chance Cone operated. It employed the sand flotation system for separating impurities from coal.

A mixture of fine white silica sand having a specific gravity of approximately 2.64 is mixed with water in such a ratio that when introduced into the cone is kept in such a state of agitation as to produce a fluid mass of such density as to float out the coal and allow all impurities to sink. To accomplish this purpose we endeavored to keep the gravity ranging from 1.68 to 1.72. Such a mixture gave us a maximum recovery of coal with a minimum amount of combustible material in the rejected refuse. As to keeping the fluid mass at a constant specific gravity it will be necessary to go into a little more detail for further enlightenment.

1st. All water and sand constantly overflowing from the

cone are recovered and sent to a main conical shaped sand sump. The breaker had two such sumps, one for each two cones. Sand and water entering the sand sump were released well down in the sump through an enclosed stack. In this manner, when the water level rose to the top of the sump it overflowed a circular launder, thus allowing pure water free from sand solids to be eliminated. At the bottom of the sand sump two openings on either side delivered the sand and water solution to two electric pumps, which in turn pumped 2500 gallons per minute back to the cone. Such a mixture which entered the cone at its top perimeter did much to sustain agitation.

2nd. An agitator shaft revolving 16 RPM and having three sets of cross arms extended down into the cone and revolved in the direction of the overflow. The cross arms tended to break up the feed material from forming islands in the fluid mass, accelerated the movement of material to the overflow, and at the same time provided more agitation.

3rd. To prevent sand from banking up along the sloping sides of the cone there were three sets of openings fitted with a short nipple and an elbow on the inner side of the cone, which acted as sprays forcing sand away from the sides. Such openings were provided at stated distances around the cone. The top set was installed at a point center to the top third of the sloping surface, the second set center to the middle third, etc.

It can be readily seen that the combination of points 1, 2 and 3 all working together provided the agitation necessary. The cone operator through long experience could tell at a glance when additional sand should be flushed into the system to replace sand loss.

The four large 13-foot cones in the main breaker handled egg, stove, chestnut, pea and #1 buckwheat sizes. The remaining product that passed through four sets of feed shakers through a 5/16" round mesh was conveyed to the annex, which housed four 7-foot cones and four sets of sizing shakers, all of which prepared rice, barley and #4 buckwheat.

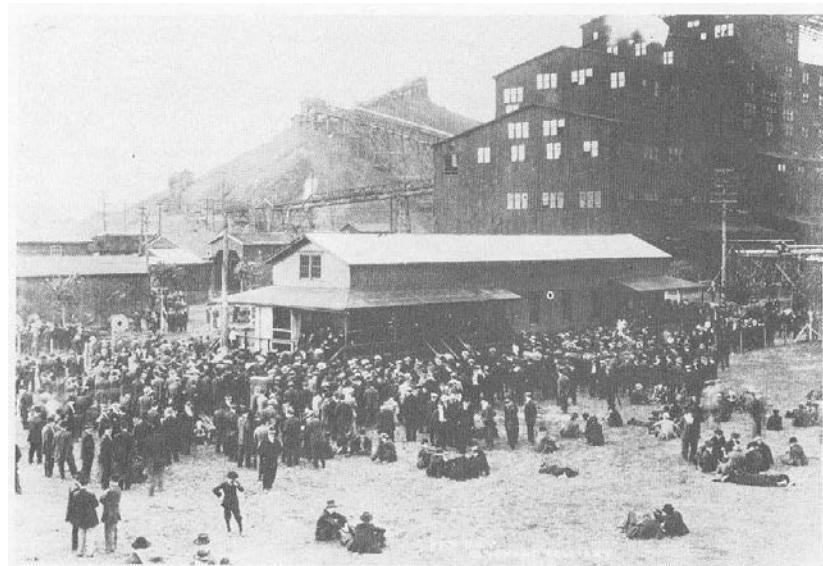
The Chance sand flotation system of cleaning coal at the time was the last word in preparation efficiency. The loss of pure coal in the domestic sizes very seldom exceeded 1%, while the steam sized refuse as regards loss of coal compared favorably with the larger refuse.

The VonStorch Breaker was a credit to the industry and endeared itself to many who were connected with its operation or were users of its product. The slogan "More Heat Less Ash" was a popular one while the breaker was in operation through the years.

As one who was present at its birth from the drawing board stage to its completion and operation and finally to its shutdown and dismantlement in 1948, I speak with authority, as I had the responsibility for its efficient operation.

The evidence of this is to be seen by all in the huge accumulation of breaker refuse dumps. The original refuse dump at the breaker site fills all the space between Nay Aug Avenue and the main line of the D&H Railroad. Later other space had to be found to deposit the refuse. The large deposits at the site of the Leggett's Creek Breaker, also at the site of the old Johnson Breaker in Dickson City and later covering a large area behind the Eureka Printing Company between the D&H Railroad and Dickson Avenue, all attest to the fact that not much usable tonnage was thrown away. It is safe to assume that these piles collectively contain approximately 15 million tons of refuse. My only hope is that they may never break out in actual combustion and start burning as is now the case at Marvine and Baker, for I did all I could to keep them free from combustible material.

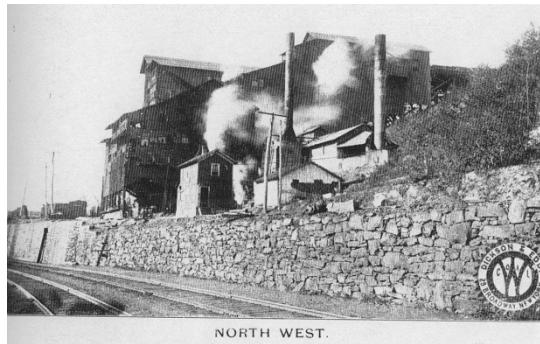
2. Breaker on the east side of the Lackawanna Valley, above Olyphant:



The breaker photograph shown above is given on p. 97 of *New York, Ontario & Western Railway Scranton Division* by Joe Bux and Ed Crist. The caption on a print of this photograph in the collection of the Lackawanna County Historical Society reads: "Payday, Olyphant Colliery, 1915." Bux and Crist have added the following note: "It could be either the Olyphant No. 2 or the Eddy Creek breakers, both of which stood side-by-side on the east side of the valley above Olyphant. Originally served by the southernmost extension of the Gravity Railroad, they were later serviced by a standard gauge branch off the D&H. In the era of the six-day week, payday was traditionally on Saturday evening and payment was in cash."

3. Northwest Breaker

The photograph given below is captioned "North West" on page 55 of *New York, Ontario & Western Railway Scranton Division* by Joe Bux and Ed Crist:



4. On October 21, 1966, 116 children and 28 adults were killed in the catastrophic collapse of a colliery spoil tip at Aberfan, Wales. In 2017, Gaynor Madgwick wrote a book on this tragedy titled *Aberfan A Story of Survival, Love and Community in One of Britain's Worst Disasters*. Here is a review of that book by Deborah F. Wenrich that was published in *Ninnau*, January-February 2018, p. 16:

## Aberfan

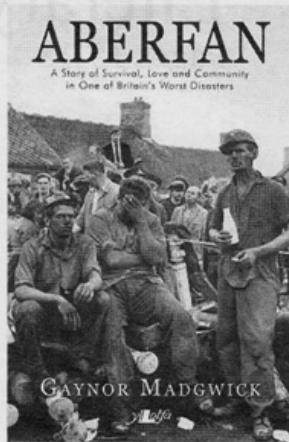
By **Gaynor Madgwick** Reviewed by **Deborah F. Wenrich**

Gaynor Madgwick has written a heart-wrenching book about the tragedy at Aberfan that occurred on October 21, 1966. This book contains Gaynor's memories as an eight-year-old child experiencing the horrific tragedy, reliving Aberfan through the eyes of a survivor, interviews with childhood friends, family members, survivors, Lord Snowden, and strangers that came to help in whatever way that they could. It lets the world know how the tragedy happened, who was to blame, how funds were raised to help, about government mismanagement of those funds, the aftermath, and the restoration of those funds.

Gaynor Madgwick thought about writing a book in 2014, when her father had a near-death experience. She began writing this book 48 years after the tragedy. When she was eight, she kept a diary; these are her memories of the tragic events that unfolded. She lost her brother Carl, her sister Marylyn, and 116 classmates and friends.

She writes of events that happened before the tragedy at Aberfan and in the weeks following the tragedy, the people that she remembered from that day. When she began writing *Aberfan*, she had countless interviews with those who dug through the rubble looking for survivors, and with the people who had come to see her in the hospital as a survivor of the tragedy. She interviewed family members, neighbors, first responders, rescuers, survivors, nurses, Lord Snowden, and chaplains. *Aberfan* captures the horrific chaos and the grief of all involved. It also gives hope to all who deal with unspeakable tragedy that life can move past the grief.

Gaynor Madgwick writes that the disaster that happened at Aberfan was most tragic and could have been totally avoided. The National Coal Board had been tipping on top of springs that were shown on neighborhood maps. The springs were



featured on an Ordnance Survey map of 1910 and a Geological Survey map of the area from 1959.

Five days after the disaster, on October 26, 1966, the Secretary of State appointed a tribunal to inquire into the causes of the Aberfan disaster. They met for 76 days, interviewed 136 witnesses and examined 300 exhibits. Lord Robens, the National Coal Board chairman, testified that the coal board had been at fault and the blame was shared with the National Coal Board headquarters South Western Divisional Board and certain individuals. Nine individuals, NCB employees and officials, were singled out for criticism. In the end no one was prosecuted, dismissed, or demoted. Lord Robens's offer to resign was rejected.

The Charity Commission advised that the fund could pay £500 to each set of bereaved parents. The committee argued that a payment of £5,000 would relieve mental stress and strain, giving those who wanted to move away the ability to do so. The Commission conceded that the payments would be permissible but "before any payment was made each case should be reviewed to ascertain whether the parents had been close to their children and were thus likely to be suffering mentally." A disaster fund was set up to aid

the village and the bereaved. Donations from around the world flooded in. The fund closed in January 1967 with the sum of £1,750,000. Gaynor Madgwick writes that the funds were used instead for a memorial, house repairs, holidays for villagers, and a community hall. The government took £150,000 pounds to remove the tips from around Aberfan. Gaynor Madgwick writes when there is no justice "there can be no true compensation. What is learned from Aberfan?"

Gaynor Madgwick testifies that her father Cliff Madgwick, Fred Grey, and Billy Lucas spent the remainder of their lives campaigning to get this money back. Her father was labeled "a troublemaker" and was jailed for speaking out. She writes that people were in too much grief to speak out or to stand up with them. Many parents and survivors did not live to see the money returned. It took 31 years for Cliff Madgwick to get the money back.

In the last chapter of *Aberfan*, Gaynor Madgwick recalls that the streets in Aberfan have not changed much since the disaster, but the geography around the town is different. The tips have gone and the pastures are green with trees. After the disaster, many groups of people would get together and organize carnivals. Eleven men got together to help and rebuild. They began the Aberfan Male Voice Choir, later called the Ynysowen Male Voice Choir. Today it helps to enrich the lives of its own community and hundreds of others with its charity work.

A new school was built on the grounds of Ynysowen, and Pantglas School was demolished in 1967. There is a memorial garden in its place. The shrub borders are laid out to form a plan of every classroom that once stood there. Near the garden, on the site of the houses demolished by the slide, stands a new community center. The cemetery is on a hillside. You can see the line of children's

graves even before you enter. A plaque at the entrance of the memorial garden states: "To those we love and miss so very much." Visitors from all over the world still visit the cemetery.

The village may always be synonymous with a terrible tragedy, but it is more than the name of a disaster. For a long time in the village there were no birthdays, engagements, or weddings. Now Gaynor Madgwick reflects that her friends have married and had children. She recounts that "once more the streets of Aberfan are filled with voices and laughter. The tears have slowly dried up in Aberfan, but we've only got better little by little. One day at a time."

*Aberfan* is published by Y Lolfa. It is available from Y Lolfa and amazon.com us, ca and uk. Well illustrated.

*Deborah Wenrich is an accomplished musician who plays fiddle and accordion with the Celtic folk band DragonFyre. She has written a ballad, "The Tragedy at Aberfan" which the band plays at nearly every gig.*

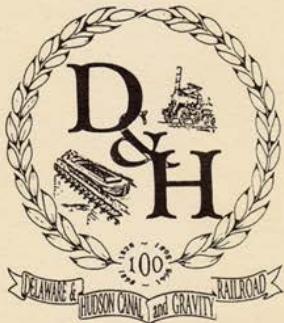
5. On December 27, 2017, the D&H Loree Colliery watch fob shown here was offered for sale on E-Bay. Our thanks to John V. Buberniak for bringing to our attention this item.



Text on this watch fob: "LOREE COLLIERY "The D&H" / 1921 WORLDS RECORD ANTHRACITE PRODUCTION 1921 1,590,201 TONS"

7. The Three D&H Symposiums:

**No. 1:** Saturday, November 7, 1998, Hunts Landing, Matamoras, PA: to commemorate the 100<sup>th</sup> anniversary of the last canal boat to use the Delaware and Hudson Canal (see below).



**DELAWARE AND HUDSON CANAL  
& GRAVITY RAILROAD**

*100<sup>th</sup> Anniversary  
D&H Symposium &  
Gala Celebration*

**Saturday, November 7, 1998**  
at Hunts Landing, Matamoras, Pennsylvania

On the weekend of November 7-8, 1998, the *D&H Transportation Heritage Council* will commemorate the 100<sup>th</sup> anniversary of the last coal boat to use the Delaware and Hudson Canal. Anthracite mined in Pennsylvania's Lackawanna Valley was transported over the Moosic Mountains by gravity railroad to Honesdale. There it was transferred to boats and hauled on the D&H Canal to Rondout, near Kingston, New York. The D&H Canal operated for 70 years, from 1828 to 1898.

*Two days of events!* Starting with the Symposium during the day on Saturday, a Reception with musical entertainment and a Gala Ball will follow in the evening. On Sunday, many of the canal and gravity railroad sites will be open to the public as part of the anniversary celebration.

## ***Registration***

*Delaware and Hudson Canal & Gravity  
Railroad*  
***100<sup>th</sup> Anniversary Symposium &  
Gala Celebration***

**Saturday, November 7, 1998**  
*Best Western Inn, Hunts Landing, Matamoras, PA*

***Registration options:***

***Go for the Whole Shebang!!!*** You get it all: The symposium, souvenir tote bag, exhibits, reception, entertainment, gala dinner program, dancing until midnight, and more food than you can imagine.

***Registration for the Symposium Includes:***

Lots of food! A symposium commemorative tote bag, lots of handouts, and a special issue of *Canal Currents*, a publication of the Pennsylvania Canal Society are all included! Registration for the reception is extra.

***Registration for Gala Dinner Dance***

***Includes:*** The Reception with light refreshments, cash bar, exhibits, musical entertainment by Rich Bala & Bob Lusk. The buffet dinner with lots of food, program and dancing to the music of the Blue Rays, follows.

***Don't Be Disappointed - Register  
Early - Space is Limited!***

The event will provide an opportunity to meet and mingle with canal buffs, D&H fans and history enthusiasts. Special symposium room rates at Hunts Landing, call 717-491-2400.

## ***Symposium Program***

November 7, 1998 at Hunts Landing  
Matamoras, Pennsylvania

*7:30-9:00 a.m. – Registration and Exhibits*

*9:00 a.m. – Greetings and Symposium  
Program*

### **Why Canals? An Overview of Anthracite Canals**

By Lance E. Metz, Historian, National Canal  
Museum

*Break*

### **Significance of the Delaware and Hudson Canal and its Gravity Railroads**

By Larry Lowenthal, Historian, Author,  
National Park Service

### **What's Happening Now with the D&H?**

Peter Osborne, Executive Director, Minisink  
Valley Historical Society

*12:00 – 1:30 p.m. – Buffet Luncheon*

### **The Legacy of the Delaware and Hudson Canal and its Gravity Railroads**

Keynote Speaker – Donald M. Sayanga,  
Historian and Independent Consultant,  
Wire & Steel Rope Industries

### **Afternoon Program Choices**

*1:30 – 3:30 p.m.*

#### **Films and Videos to be Shown in Lobby**

Gravity Railroad Film  
Historic Footage of the D&H Canal  
Roebling Bridge Restoration Video

### **An Armchair Tour of the D&H**

David G. Barber, P.E.  
Author of *Canal Hiking Guides*

*~ or ~*

### **The Meaning of National Historic Landmark Designation**

Dr. Robert Grumet, Archeologist,  
Author, National Park Service

*Break*

### **Analysis of the Archbald Papers**

Michael Kries, Archivist,  
University of Scranton

*~ or ~*

### **A Report on the Trek ~ Analysis of D&H Trail and Tourism Opportunities**

Gene Wock, National Park Service

*3:30-4:30 p.m. – Roundtable Discussion –  
What the D&H Did and Didn't do for  
the Region*

### **Reception**

Featuring light refreshments, cash bar, D&H  
exhibits, and a program of canal songs  
and musical entertainment by  
Rich Bala & Bob Lusk

### **Gala Dinner-Dance Celebration**

*7:00 p.m. – Dinner and Program*

*9:00 p.m. – Grand Promenade*

*9:00 p.m. to Midnight – Dancing  
Music by the Blue Rays*

***“D&H Formal” or Period Costume  
encouraged!!***

*Registration for The Whole Shebang!!!*

(Symposium, Reception, Entertainment, Dinner-dance)

Early registration until October 1, 1998

Organization Discount (member & guest)

*Super Saver Discount* for organization  
members (and guest) who register early!

Persons @ \$75.00 = \$ \_\_\_\_\_.00

Persons @ \$70.00 = \$ \_\_\_\_\_.00

Persons @ \$70.00 = \$ \_\_\_\_\_.00

Persons @ \$65.00 = \$ \_\_\_\_\_.00

*Symposium Registration*

Early registration until October 1, 1998

Organization Discount (member & guest)

*Super Saver Discount* for organization  
members (and guest) who register early!

Persons @ \$40.00 = \$ \_\_\_\_\_.00

Persons @ \$37.50 = \$ \_\_\_\_\_.00

Persons @ \$37.50 = \$ \_\_\_\_\_.00

Persons @ \$35.00 = \$ \_\_\_\_\_.00

*Reception Registration (for Symposium Registrants)*

(Refreshments & Entertainment)

Persons @ \$5.00 = \$ \_\_\_\_\_.00

*Gala Celebration Registration*

(Reception, Entertainment and Dinner-Dance)

Early registration until October 1, 1998

Organization Discount (member & guest)

*Super Saver Discount* for organization  
members (and guest) who register early!

Persons @ \$35.00 = \$ \_\_\_\_\_.00

Persons @ \$32.50 = \$ \_\_\_\_\_.00

Persons @ \$32.50 = \$ \_\_\_\_\_.00

Persons @ \$30.00 = \$ \_\_\_\_\_.00

Registration Fee(s)

Amount Enclosed \_\_\_\_\_

*Additional contributions are tax deductible and are welcomed. You can help the D&H Transportation Heritage Council promote the preservation and appreciation of the historic resources of the D&H.*

*No refunds after October 1, 1998.*

*Please remember to make your own arrangements for lodging.*

NAME(S) (FOR NAME TAGS)	
STREET ADDRESS	
CITY, STATE, ZIP	
GROUP AFFILIATION	
PHONE	
MASTER CARD/VISA	
ACCOUNT NUMBER	
EXPIRATION DATE	
SIGNATURE	

Make checks payable to: "Symposium - Minisink Valley Historical Society". Send completed registration forms and checks to: Minisink Valley Historical Society, Post Office Box 659, Port Jervis, NY 12771. For additional information call (914) 856-2375 or go to <http://www.minisink.org>

The Symposium is an all-day program full of interesting D&H topics presented by enthusiastic experts. Registration includes a symposium tote bag, handouts, and a special issue of *Canal Currents*, a publication of the Pennsylvania Canal Society.

**Exhibits on the D&H** - Art, photography, and much more including book signings and sales, organization displays, hand-outs, and souvenirs.

**Films and videos on the D&H** - gravity railroad and the canal will be an additional option.

**Lots of Food!** The day starts with muffins, Danish pastries, juice, tea & coffee at registration. Lunch will be a buffet with a choice of desserts. Afternoon break will include sodas and Hunt's Landing's famous, outrageous chocolate chip cookies.

**A Reception** featuring light refreshments and musical entertainment will follow the Symposium. A program of canal songs will be presented by folk singers Rich Bala & Bob Lush.

**The Gala Dinner-Dance** caps off the day with an evening of celebration. There will be more great food, a brief program and dancing to the music of the *Blue Rays*. **Dress: "D&H Formal" or period costume is encouraged!!**

**For More Information:** Call the Minisink Valley Historical Society at (914) 856-2375 or The Century House Historical Society at (914)658-9900 or visit the **D&H Transportation Heritage Council's** web site at <http://www.minisink.org/dhcgrsm.htm>.

## **D&H Transportation Heritage Council**

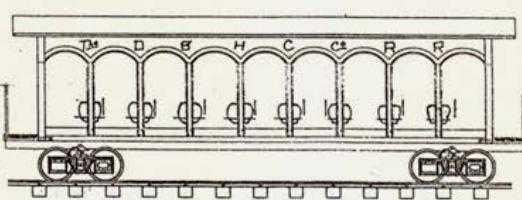
The Trek, the 100<sup>th</sup> Anniversary Symposium and Gala Ball are projects of the **D&H Transportation Heritage Council**, a partnership organization committed to promoting appreciation and preservation of the historic resources of the Delaware and Hudson Canal and Gravity Railroad System and the Pennsylvania Coal Company Gravity Railroad. Portions of the D&H Canal have been designated as a *National Historic Landmark*.

Partnership members are public, private, and non-profit local, state and federal organizations, and individuals. In Pennsylvania they are: the Carbondale Historical Society and Museum, Carbondale; Waymart Area Historical Society; Wayne County Historical Society and Museum, Honesdale; Northeast Pennsylvania Audubon Society; Pennsylvania Canal Society; and the Pennsylvania Department of Environmental Protection.

New York organizations include the Town of Lumberland Historian; Minisink Valley Historical Society, Port Jervis; Neversink Valley Area Museum, Cuddebackville; D&H Historical Society and Museum, High Falls; the Century House Historical Society, Rosendale; and the D&H Canal Heritage Corridor Alliance, Ulster County.

Other supporters include the Canal Society of New Jersey; National Canal Museum, Easton, PA; Pike County Chamber of Commerce, Pocono Mountains Vacation Bureau; and the National Park Service.

**No. 2:** Friday/Saturday/Sunday, November 16-18, 2001: to commemorate the 150<sup>th</sup> anniversary of the incorporation of the City of Carbondale, March 15, 1851, and the Borough of Waymart, April 8, 1851 (see below)



## **D&H SYMPOSIUM II**

**A Celebration of the History of the  
Delaware and Hudson Canal Company,  
with Special Emphasis on the D&H  
Gravity Railroad from Carbondale to  
Honesdale**

**November 16-18, 2001**

**Ladore Lodge and Conference Center  
Waymart, PA**

**Sponsored by**

**The Carbondale Historical Society  
The Waymart Area Historical Society  
The Wayne County Historical Society  
Far View Tracks to Trails  
The D&H Transportation Heritage Council**

**To Commemorate  
the 150<sup>th</sup> Anniversary of the  
Incorporation of  
the City of Carbondale, March 15, 1851  
and  
the Borough of Waymart, April 8, 1851**

# Symposium Participants

**Walter B. Barbe, Ph.D.**

Chair of the Executive Committee of the  
Dorflinger/Suydam Wildlife Sanctuary

**Rodney Brown, Ph.D.**

Trustee, Wayne County Historical Society and  
Waymart Area Historical Society

**Lynn Conrad, Project Manager**

Rail-Trails Council of Northeastern  
Pennsylvania

**Stuart Dixon, Senior Architectural Historian**  
The Louis Berger Group, Inc.**Robert Hecht, Ph.D., Historian, Lecturer,  
and Professor of History**  
Kingsborough Community College  
City University of New York**Michael Knies, Special Collections Librarian**  
Weinberg Memorial Library  
University of Scranton**Henry Loftus, Executive Director**  
Dorflinger/Suydam Glass Museum**Larry Lowenthal, Historian and Author**  
National Park Service, retired**Lisa M. Lyons, Rivers & Trails Program**  
National Park Service**Lance E. Metz, Historian for the National  
Canal Museum, Easton, PA****Peter Osborne, Executive Director**  
Minisink Valley Historical Society**Rich Pawling, History Alive**  
Educational/Interpretive Specialist**Sherry L. Petrilak, Trails Specialist**  
Wildlands Conservancy**S. Robert Powell, Ph.D.**  
Executive Director  
Carbondale Historical Society**Kurt Reed, Glass Historian and Archivist**  
Waymart Area Historical Society**Philip Ruth, Historian, Author, and Director of  
Research, CHRS, Inc.****Donald M. Sayenga, Historian and Archivist**

The Wire Association International

**Jim Shaughnessy, Author and Photographer****Tom Supey, Mine Foreman**  
Lackawanna Coal Mine Tour**Jane Varcoe, Secretary/Treasurer**  
Waymart Area Historical Society**ORGANIZING COMMITTEE**

**Rod Brown, Barbara Holmes,  
and Jane Varcoe:** Waymart Area  
Historical Society

**S. Robert Powell:** Carbondale Historical  
Society and Museum

**Sally Talaga:** Wayne County Historical  
Society and Museum

**CONTACT PERSON**

**Jane Varcoe**  
570-488-6750  
[janev@socantel.net](mailto:janev@socantel.net)  
Post Office Box A, Waymart, PA 18472  
Fax: 570-488-6944

**Friday, November 16, 2001**

**5:00-9:00 PM Registration**

**5:30-6:30 PM Buffet Dinner**

**Evening Session, 7:30-10:00 PM**

Chair: Walter B. Barbe, Ph.D.

**The Glass Industry Along the Canal**

Kurt Reed and Henry Loftus

**9:00-10:00 PM Reception**

Refreshments and opportunity to meet  
speakers. Authors will be available for  
book signings.



## **Saturday, November 17, 2001**

**7:30 AM      Registration. Exhibits open.**

**8:45-9:00 AM    Greetings**

Sandra Boguski, Vice President  
Waymart Area Historical Society

Sally Talaga, Executive Director  
Wayne County Historical Society

Ray Purvis, Director  
The Salvation Army Lodore Lodge

**Morning Session, 9:00 AM-12:15 PM**  
Chair: Rodney Brown, Ph.D.

**9:00-9:45 AM    Overview of D&H Gravity Railroad and Canal**  
S. Robert Powell, Ph.D.

**9:45-10:30 AM    Anthracite Mining in the Lackawanna Valley**  
Tom Supay

**10:30-10:45 AM    Break**

**10:45-11:30 AM    How the Delaware and Hudson Canal and Its Gravity Railroads Stimulated the Wire Rope Industry of the United States**  
Donald M. Sayenga

11:30-12:15 PM **A Ride on the D&H Gravity,  
Courtesy of Photographer  
Louis Hensel  
Philip Ruth**

12:15-1:15 PM **Buffet Luncheon, Exhibits**

**Afternoon Session, 1:15-5:30 PM**  
Chair: Peter Osborne

**1:15-2:15 PM Men Who Built the Delaware  
and Hudson Canal Company**

**James Archbald**  
Robert Hecht, Ph.D.

**Philip Hone**  
Michael Knies

**2:15-3:00 PM Relections on the D&H Canal**  
Larry Lowenthal

**3:00-3:15 PM Break**

**3:15-3:45 PM The D&H's Honesdale Branch,  
Successor to its Gravity Railroad**  
Stuart Dixon

**3:45-4:30 PM From Rails to Trails**

3:45-4:30 PM **From Rails to Trails**

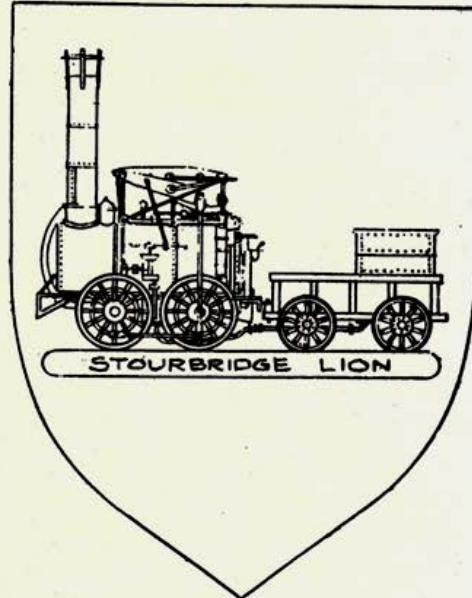
**D&H and O&W Trails**  
Lynn Conrad

**Be Tenders with Us! Strategies for  
Developing an Effective and Fun  
Trail Maintenance Program**  
Sherry L. Petrilak

**Current Trail Sections Open  
on the D&H**  
Lisa Lyons

4:30-5:30 PM **Roundtable Discussion**

**The Place of the D&H Gravity  
Railroad and Canal in the  
Industrialization of the US  
Northeast**  
Moderator: Lance Metz  
Participants: Symposium Presenters



## **Evening Session, 6:00-10 PM**

**Chair: Jane Varcoe**

### **6:00-7:00 PM Banquet**

**7:15-8:00 PM The Delaware & Hudson Railroad: A Retrospective**  
**Jim Shaughnessy**

### **8:00-9:00 PM Fire in the Hole!**

A day in the life of Frank Kehoe,  
a 1905 coal miner.  
Presented by Rich Pawling  
of *History Alive!*

### **9:00-10:00 PM Reception**

**Birthday Celebration:  
Carbondale and Waymart's  
150<sup>th</sup> Birthdays**

**Sunday, November 18, 2001**

**9:00 AM-12:00 PM   Museum and Historical  
Sites Tour**

**BUS TOUR:** Waymart and Carbondale areas, with stops at Wayne County Historical Society Museum and Wayne County Chamber of Commerce Visitors Center (to see operating exhibit of D&H Gravity Railroad and Canal locks)



**Inscription on PHMC  
Historical Marker,  
Gravity Park, Carbondale, PA**

### **GRAVITY RAILROAD**

Here began one of the first railroads in the Western Hemisphere, built 1828-29. The line had its eastern terminus at Honesdale; its southwestern terminus was later extended to Archbald and ultimately to Valley Junction near Olyphant. Built by the Delaware & Hudson to move coal to the D&H Canal, this line eventually provided passenger service and operated until the beginning of 1899.

## **Delaware and Hudson Gravity Railroad and Canal**

- The D&H Gravity Railroad from Carbondale to Honesdale was opened on October 9, 1829. It was designed by John B. Jervis, and was the third rail system in the United States (the first was at Breed's Hill, MA; the second was at Jim Thorpe, PA). The 1829 road had strap rails, which were replaced on most of the system, in 1858, by iron T-rails.
- The 1829 roadbed consisted of Planes 1-5 from Carbondale to Rix's Gap, Level 1 across the top of the mountain, Planes 6-7 from Farview to Waymart, Level 2 from Waymart to Prompton, Plane 8 at Prompton, Level 3 from Prompton to Honesdale. Chains were used on the planes from 1829 to 1831; hemp rope was used from 1831 to 1856; wire rope (invented by John Roebling) was installed on the planes in 1856 and was used until the Gravity Railroad closed in 1899.
- The first deep-shaft anthracite mine in America was opened at Carbondale by the D&H in 1831. By the mid-nineteenth century, more than a million tons of anthracite coal were being shipped annually by rail from Carbondale to Honesdale.
- One of the most famous locomotives in American History, the Stourbridge Lion (now in the Smithsonian Institution) was given its trial run on August 8, 1829, at Honesdale, with Horatio Allen as engineer. The

"Lion" was one of four locomotives imported from England by the D&H for use on the "levels" on the Gravity Railroad.

- The roadbed was reconfigured in 1841-43, 1856-58, and 1866-68. Scheduled passenger service was instituted on April 5, 1877.
- The gauge on the D&H Gravity Railroad was 51 inches (standard gauge is 56 1/2 inches).
- Anthracite coal from the mines in the Lackawanna Valley was loaded into canal boats at Honesdale, and shipped to Rondout on the Hudson River. The D&H Canal was 108 miles long, with 108 locks. It opened on October 16, 1828. On November 5, 1898, the last canal boat left Honesdale for the Hudson River.
- In 1843, the Gravity Railroad was extended from Carbondale to Archbald; in 1860 the line was extended to Providence.
- The D&H Gravity Railroad operated for the last time in its entirety as a gravity line on January 3, 1899, at which time the "light track" was converted into a steam rail line, known as the Honesdale Branch of the D&H Company.
- There were 19 stations on the Honesdale Branch: Carbondale, Lookout Junction, Bushwick, Lincoln Avenue, Racket Brook, White's, Panthers' Bluffs, Quigley, Farview, Canaan, Munson, Lake Lodore, Waymart, Keene, Steene, Prompton, Fortenia, Seelyville, and Honesdale. The Honesdale Branch closed on August 20, 1931.

**No. 3:** Saturday, August 7, 2004, Lackawanna Heritage Valley Authority Building, Mayfield, PA: to commemorate the 175<sup>th</sup> anniversary of the running of the Stourbridge Lion (see pp. 260-263 in Volume XVIII in this series)

**Additions for Volume XIX:**

1. On February 17, 2018, we discovered a in the archives of the Wayne County Historical Society copy of a 32-page document titled “The Railroad Era. First Five Years of its Development”, 1884, by Horatio Allen. This is a very important document in the history of the D&H and we present herebelow a copy of the complete document.

W<sup>m</sup> Horatio Allen

THE

# RAILROAD ERA.

FIRST FIVE YEARS

OF ITS

DEVELOPMENT.

BY  
HORATIO ALLEN.

L. L. D.



NEW YORK:  
1884.

THE  
RAILROAD ERA.  
FIRST FIVE YEARS  
OF ITS  
DEVELOPMENT.

BY  
HORATIO ALLEN.

NEW YORK:  
1884.

COPYRIGHT, 1884, BY  
HORATIO ALLEN.

[From the *Railroad Gazette*.]

THE article that follows had its origin in my having accepted the special invitation of the Commissioners of the "National Exposition of Railway Appliances," to be held in Chicago in June, 1883, to visit the exhibition, and at the appropriate time present such reference to early railroad development as circumstances permitted. My friends of the *Railroad Gazette* informed me that in such event they would have stenographic notes taken for a report that would appear in their paper.

When the time came, circumstances did not permit so full a presentation as the subject called for, and on the receipt of the report prepared for the *Gazette* I decided to make it more complete, and that what was thus summarily presented might meet the eyes of many to whom it would be of interest in this land, where the railroad era has perhaps its greatest development, to have it also before the public in pamphlet form.

HORATIO ALLEN.

HOMEWOOD, South Orange, N. J.

## THE RAILROAD ERA.

### THE FIRST FIVE YEARS OF ITS DEVELOPMENT.

[From the *Railroad Gazette*.]

By Railroad Era, is meant the era commencing with the permanent and successful use of the locomotive on the Stockton and Darlington Railroad, in England, in the year 1825, that has seen within less than sixty years, the iron track laid in so many lands, on which locomotives are performing their great work in the transportation of passengers and freight.

The time and circumstances of the professional life of a civil engineer had placed me early in the field, as the era opened, and thus of necessity occurred a personal knowledge of the very beginning of the era in England as well as in this country.

Although often requested, and sometimes by formal resolutions of societies of which I have had the honor to be president, to commit to print what was on many occasions the subject of interesting reminiscences, I have omitted to this late day these summary statements, in part, perhaps, for the reason that they are insomuch of a personal character.

But recently an occurrence led me to put these reminiscences into some connected relation, which, being made more complete, the following pages are placed before the public.

It is proposed to present the facts, occurrences, and decisions in their order of the FIVE YEARS that followed the introduction

of the locomotive on the Stockton and Darlington road in England, in September, 1825. During that period was determined essentially the character of the development of the railroad era, in all of which this country took an early and active part.

As preliminary to setting forth what occurred in the period named, it is of direct interest to go back to the invention that made a locomotive possible.

THE CONDENSING STEAM-ENGINE NOT THE LOCOMOTIVE ENGINE.

It will be recollected that the first use of steam to do work was in co-operation with the atmosphere to raise water from the bottom of a mine, some twenty-five feet, and then to force the water many more feet to the surface.

The successive improvements in this water-raising use of steam in co-operation with the atmosphere, led, when the invention of Newcomer came into the hands of Watt, to the condensing steam-engine. In that engine steam was used at a pressure of only seven pounds to the square inch greater than the pressure of the atmosphere, and water in large quantity was necessary for condensing the steam. The condensing steam-engine was therefore entirely inapplicable as a motive power on a railroad. The locomotive, therefore, does not date back to the steam-engine as it came from the hands of Watt.

THE HIGH-PRESSURE ENGINE, THE NON-CONDENSING ENGINE, THE LOCOMOTIVE ENGINE.

It is remarkable that the condensing steam-engine of Watt, being the subject of a patent, and its use only to be had on payment of a large patent fee, it was only when that patent was nearly at its close, that some one had the boldness to use steam of so great a pressure as to bid defiance to the resistance of the

atmosphere, and to plan and build an engine of the extreme simplicity that is the case when the steam, on leaving the cylinder, forces the atmosphere out of its way and is condensed in the open air. About the year 1800, the boiler, engine, and appurtenances that make the high-pressure engine, an engine that was to use steam of fifty pounds pressure instead of seven pounds, and therefore relatively a high-pressure engine, was the subject of a patent issued to Trevithick and Vivian; and not long afterward a high-pressure engine, boiler, and appurtenances were constructed and set to work. They were followed by the application of the high-pressure engine and boiler to turn the wheels of a carriage that carried boiler, engine, etc., the object being to use steam power, applied to turn the wheels, and thereby haul other carriages carrying loads. In plan and principle, the parts and combinations included all that is essential to the locomotive as a tractive motive power.

But the results of the trials made were not of a character to make the locomotive date from the time and acts of Trevithick and Vivian; and some years were to pass before a locomotive built under the direction of George Stephenson was put to work on a mine railroad at Killingworth, near Newcastle. The Killingworth locomotive was the antecedent of the locomotive put to work on the Stockton and Darlington road, a quarter of a century after the high-pressure engine of Trevithick and Vivian.

Horatio Allen  
recognized the  
important role  
played by Oliver  
Evans in the history  
of the high-pressure  
steam engine.

→ THE HIGH-PRESSURE ENGINE AND LOCOMOTIVE COMBINATION OF  
OLIVER EVANS, OF PA., U. S., 1776.

But before proceeding to state what was done by Stephenson, it is of interest on this side of the Atlantic to refer to what was proposed, tried, and proved in relation to the high-pressure engine, and to the locomotive engine as a tractive power on a road, by that remarkable man, Oliver Evans, of Pennsylvania.

As early as 1780, and before Watt had perfected and introduced the condensing engine, Oliver Evans had matured his plan of a high-pressure engine, and had applied it to do work as a stationary engine.

It is of interest to know that the boiler which Oliver Evans constructed and used was a *multitubular* boiler, but differing from the multitubular boiler, now the established boiler of the locomotive, in the particular that in the Evans boiler the water was in the tubes, and the products of combustion passed between the tubes, whereas in the present locomotive boiler the products of combustion pass through the tubes and water surrounds them. What was accomplished by Oliver Evans had all the elements of a permanent success.

Had Evans had a Bolton, as Watt had a co-operating Bolton, or a Pease, as George Stephenson had his Pease as a co-operator, the high-pressure steam-engine, both as a stationary and as a tractive motive power, would have had a position from that time of great interest to this country, and through this country to the world ; but no such aid coming from individual or State, vainly applied to, there is only the record of what might have been—another of the many cases where the inventor was ready, but the age was not.

#### STEPHENSON'S KILLINGWORTH LOCOMOTIVE, 1814.

In 1814 George Stephenson placed on the mine railroad at Killingworth, near Newcastle, a locomotive in all its essential parts and combinations.

At that time the high-pressure engine had become known to such extent that Stephenson probably was not the inventor of the high-pressure engine, which formed so vital a part of his combination.

Although in daily use for several years, this locomotive did not attract attention. Its inefficient operation was due mainly to the use of a boiler of limited steam-making capacity.

## THE OPENING OF THE RAILROAD ERA.

STEPHENSON'S STOCKTON AND DARLINGTON LOCOMOTIVE,  
SEPTEMBER, 1825.

But the time came when the construction of the Stockton and Darlington Railroad, a coal mine railroad, under the direction of Stephenson, afforded the opportunity for the locomotive, and with the opportunity came the co-operating man. That man was Pease, a member of the Society of Friends. Mr. Pease had a large interest in the Stockton and Darlington Railroad, and was so much impressed by the statement and explanation of Stephenson as to what was done and what might be done by the locomotive, as a tractive motive power, that, accompanied by Stephenson, he went to the Killingworth mine railroad to inform himself as to the locomotive at work there.

The result of this visit was that Mr. Pease, a friend of Mr. Pease, and Mr. Stephenson, united in providing the money for the construction of the locomotive that was put to work on the Stockton and Darlington road in September, 1825, and its success opened the railroad era.

The performance of this locomotive, although satisfactory to a great degree to the parties specially interested, again made known that the boiler was not yet of the steam-making capacity that could be had of a weight not exceeding the limit of weight admissible on a railroad. The attention thus excited had as one result the multitubular boiler, the invention of Mr. Booth, of the Liverpool and Manchester road, then in progress of construction, and also the boiler proposed by John U. Rastreck, of

Stourbridge, which may be called the many-flue boiler, using riveted flues of as small diameter as could be made by riveting.

In the year 1827 the locomotives on the Stockton and Darlington road were doing their daily work; the advocates of the locomotive as the future motive power were claiming the greater results that were to attend the use of boilers of greater efficiency in the locomotive. But as yet the question was a debatable one; and the extent to which it was debatable will be strikingly presented by two acts of great significance, which are made the more remarkable by the fact that George Stephenson had become the Chief Engineer of the Liverpool and Manchester Railroad, then in progress of construction. But it is to be recollected that George Stephenson had not at that time risen to the position as an authority which he subsequently held.

ANTICIPATION IN THE UNITED STATES OF THE COMING RAILROAD  
ERA IN 1827.

The reference to what was done and what was not done by the Liverpool and Manchester Railroad Company, is postponed at this state of questions to be decided, because the action of other parties came in at this time, which in its results is of special interest to this country.

The reference to this action is of necessity personal, and it is to be borne in mind that it is only as matter of history that the successive statements that follow are made.

During the years 1826 and 1827, the use of the locomotive on the Stockton and Darlington road had become known to many, and especially to civil engineers in this country, and among others to myself, then a Resident Engineer on the line of the Delaware and Hudson Canal, the great engineering enterprise of the time, the first of the great works, canal and rail-

road, that were to bring the anthracite coal of the valley of the Susquehanna into the valley of the Delaware and of the Hudson, and to the ocean.

Such consideration as was within my power led me to a decided conviction as to the future of the locomotive as the tractive motive power on railroads for general freight and passenger transportation, as it had begun to be for mine transportation.

The same judgment as to the locomotive which I hold now I held then. A brief reference to the essential character of

THE LOCOMOTIVE AS A TRACTIVE POWER,

is not out of place in this reference to its introduction as the motive power on all railroads.

A horse having the power of onward motion in himself, that power is used as a *tractive* power on a railroad ; when the horse is by harness and traces connected with a railroad car, and the resistance of the car to onward motion being less than the power of the horse, onward motion takes place. How is it that the locomotive, by its steam-engines and combination with the iron rails, has the power of onward motion, and therewith becomes a *tractive* force ?

The reply to this question is not as simple and direct as it is usually considered to be ; and as the full truth may be of interest to some readers, the following statements are added as pertinent to the subject in hand.

It is readily understood that if a locomotive is blocked up to a position at which the driving-wheels (the wheels on which the steam-engines act) are *not* in contact with the iron rail, and steam is let into the two steam cylinders, the two wheels will have rotary motion, and at great rate if desired.

Such being the result of the operation of the steam-engines

under the circumstances, suppose the locomotive to be lowered to the rails, and the weight of a large part of the locomotive, including boiler, engines, etc., rests on the rails through the driving-wheels, and that again steam is let into the cylinders; there being no cars attached to the locomotive, the locomotive at once has *onward motion*.

This onward motion is usually referred to the rotation of the driving-wheels, caused by the *direct* action on them of the two engines.

This is only in part true, and attention is to be directed to the *other* cause of onward motion.

When the crank-pin on the driving-wheel is on the *upper* half of one rotation, it is forced by the steam power acting on it to make that half rotation, and in consequence of that half rotation the locomotive has a certain onward motion; but when the crank-pin makes the *lower* half of the rotation, the steam in the cylinder, acting direct on the cylinder-head to cause onward motion—onward motion takes place; and with it, of necessity, the onward motion of the locomotive which carries the cylinder and the locomotive having onward motion, the wheels that carry the locomotive of necessity have rotary motion.

Thus, as a matter of fact, the onward motion for half of each rotation is caused by that half rotation, and the other half rotation is due to the onward motion of the locomotive.

But a more important question remains to be answered, viz.: How is it that in *either* case onward motion of the locomotive takes place?

The reply is that when steam acts on the combination, the motion yielding to its force can take place in one of *two* ways:

1. The wheels may *slip* on the rails.
2. The locomotive can have onward motion.

To each of these motions there is a resistance.

In the one, the resistance to *slipping* on the rail.

In the other, the resistance of the locomotive and its train to onward motion.

The word *slip* inadequately suggests the great resistance to *slipping*, that is the case when the surface of the wheel is forced into contact with the surface of the rail, by the weight of the boiler, engines, etc., of the locomotive. That weight often exceeds four tons to each wheel, or eight tons to the two wheels. The resistance to the slipping of the wheel under this great pressure, is the same as the resistance to movement along the surface of the rail, of eight tons of iron lying on the rail.

Experiment had long ago determined that the resistance to the movement of iron resting on iron, the surfaces not lubricated, exceeded one-eighth the pressure on the bearing surface; that is, that one ton suspended vertically and acting through a pulley, to move eight tons horizontally, would be required to move the eight tons along the rail.

The resistance to the onward motion of the locomotive and its train of cars, can be expressed with equal definiteness. Such being the relation of the two resistances, it is plain that as long as the resistance to onward motion of the locomotive is less than the resistance of the wheels to slip on the rail, the locomotive and its train will have onward motion; but if from any circumstance the resistance to onward motion becomes greater than the resistance of the wheels to slipping, then, of course, the wheels slip, and the locomotive stands still—an occurrence which often meets the eye of the traveller, when a train in motion on a level road commences the ascent of a rising grade for which the locomotive is not prepared.

Early in the year 1827, I had given all the attention that it

was in my power to give, and having come to conclusions as to the locomotive, that all subsequent experience has confirmed, and believing that the future of the civil engineer lay in a great and most attractive degree in the direction of the coming railroad era, I decided to go to the only place where a locomotive was in daily operation, and could be studied in all its practical details.

Closing my service on the Delaware and Hudson Canal, some two months were appropriated to certain objects and interests, after which I was again in New York, preparatory to going to England.

FIRST ORDER FOR A LOCOMOTIVE AFTER THE STEPHENSON LOCOMOTIVE IN 1825, BEING THREE FOR THE DELAWARE AND HUDSON CANAL COMPANY OF NEW YORK AND PENNSYLVANIA, IN 1827, AND BUILT IN 1828.

On my return to New York from these visits, I found that it had been decided by the Delaware and Hudson Canal Company to intrust to me, first, the having made in England for that company the railroad iron required for their railroad, on which the coal from their mines in the valley of the Lackawanna, a tributary of the Susquehanna, was to be transported across the mountain range which intervened, to the Lackawaxen, a tributary of the Delaware, whence by canal the valley of the Hudson was reached, and by the Hudson River the ocean was reached at New York; and, second, the having built in England for the company three locomotives, on plans to be decided by me when in England.

This action of the Delaware and Hudson Canal Company was on the report of their Chief Engineer, John B. Jervis, and thus it occurred that the first order for a locomotive engine, after the locomotives on the Stockton and Darlington road were at work,

Horatio Allen: "... it had been decided by the Delaware and Hudson Canal Company to intrust me, ... second, the having built in England for the company three locomotives, on plans to be decided by me when in England [emphasis added]."



came from an American company, on the report of an American civil engineer, now a resident at Rome, in the State of New York.

It was under these favorable circumstances that I left New York in January, 1828, and within two days after my arrival at Liverpool I made the acquaintance of George Stephenson, on the most agreeable relations, and from that time during my stay in England I received from him every kindness in his power, and all the aid to what I had come so far to seek, that was at his command, at Liverpool, on the Stockton and Darlington Railroad, and at Newcastle, at that time the centre of all that was in progress in railroad and locomotive matters.

FIRST ORDER FOR RAILROAD IRON FOR THE UNITED STATES BEING  
FOR THE DELAWARE AND HUDSON CANAL COMPANY, 1828.

The iron for the railroad first required attention, and as its manufacture, although executed in England, was on a plan of American origin, some reference to its manufacture is appropriate in this article.

The instructions which accompanied the authority to contract, etc., describe a mode of making the iron. On reading the description it appeared to me that a less expensive plan could be used. This I explained to the committee of the Delaware and Hudson Canal Company. It was thought proper to have the judgment of some one having experience in rolling iron, which I had not, as I had not even seen a bar of iron rolled. The proprietor of the only rolling-mill near New York, at the request of the committee, came to New York to consider the plan proposed, and after examination he stated that in his judgment the plan would not be a success. Nevertheless I thought it would be well to suggest the plan at the rolling-mills in England.

This being the first order for iron made expressly for a railroad from this country, it was deemed advisable to go to the mills and explain what was wanted, and to suggest one way in which the iron could be made, as it appeared to me. Of the seventeen mills visited, and from which proposals were received, only three thought well of my suggestion.

With one of the three, the Guests, of Merthyr Tydvil, a contract was made. When the time for examination of the iron came it was not satisfactory, and I said that I could not accept iron of that character ; they refused to deliver any other.

Application was then made to W. & I. Sparrow, of Wolverhampton, another of the three, and reference to what had occurred at Merthyr Tydvil. I described very plainly what I expected. In reply I was informed that the intention in their proposals was what I had fully explained. The contract was therefore made with W. & I. Sparrow. My wish in this case to remain and see the preparations made being acceded to, the rolls to be fitted up were on hand, and in ten days the iron was being made on the plan proposed, and subsequently the iron was delivered in every respect satisfactory. The large amount of iron of the same character made for this country in after years, was all made on that plan. If the mechanical details of the plan were described, there would be surprise that there ever had been any question, or that it had been thought worth the time to refer to it.

THE BOILER OF THE LOCOMOTIVES THE GREAT QUESTION OF THE LOCOMOTIVE.

The order for the locomotive required the determination of the plan of boiler, and in order to that decision, and to the study of all matters in connection with the construction and use of

railroads, much time was passed at Liverpool in connection with the Liverpool and Manchester Railroad, on the Stockton and Darlington Railroad, at Newcastle, and at Stourbridge, the place at which were the works of Foster, Rastrick & Co., from whom proposals to furnish the railroad iron had been received.

As to the boiler, the result on my mind was a decided confidence in the multitubular boiler proposed by Mr. Booth, of the Liverpool and Manchester road, but I found in many a distrust of that plan of boiler as being an *untried* boiler. John U. Rastrick, of Stourbridge, of whose position on all railroad questions a very marked expression will be stated presently, recommended a boiler of small riveted flues of as small diameter as could be riveted, and in number as many as the end of the fire-box would allow.

Under the circumstances, it appeared to me that the responsibility resting on me would be more prudently met by the order of two locomotives from Stephenson, which were built at Newcastle, and one from Foster, Rastrick & Co., which was built at Stourbridge.

The plans of the locomotives, the proportions of parts, and all details, were left to the judgment of the builders, as their experience far exceeded mine.

The only points decided by me were that the boilers of the locomotives built by Stephenson & Co. were to be multitubular boilers, the dimensions of the tubes to be decided by the builders; and that the boiler of the locomotive built by Rastrick & Co. (the "Stourbridge Lion") was to be a flue-boiler, the size and number of the flues to be decided by the builder.

As the locomotives were built after I left England, they were never seen by me until I saw them in New York, and I never saw the inside of any of the boilers until I saw the inside of the

boiler of the "Stourbridge Lion," at Chicago, in 1883; when, to a surprise so great that I could not believe that the inside of the boiler had not been changed, I found that the discretionary power placed in Mr. Rastrick had not been used in the manner agreed on after full discussion, and after I had yielded to his judgment in having a flue-boiler at all.

In the orders thus given in the early summer of 1828 for three locomotives, is presented the fact that the *first* order for a locomotive after the demonstration of the locomotive as a successful tractive power on the Stockton and Darlington Railroad in 1825, came from an American company on the report of their chief engineer, trusted to the discretionary action of an American civil engineer.

The three locomotives were received in New York in the winter of 1828 and 1829.

One of each kind was set up, with the wheels *not* in contact with the ground, and steam being raised, every operation of the locomotive was fully presented except that of onward motion.

The locomotive from Stourbridge received its name "Stourbridge Lion" from the fancy of the painter, who, finding on the boiler end a circular surface, slightly convex, of nearly four feet diameter, painted on it the head of a lion, filling the entire area, and in bright colors.

The river and canal being closed by ice, it was not until the opening of navigation in the spring of 1829 that access was had to the railroad at Honesdale, Pa., which is at the head of the canal and at the beginning of the railroad.

Returning to New York during the winter of 1828 and 1829, I refer to a brief connection with the Delaware and Hudson Canal Company, to present in striking contrast the financial resources of that time and the present. The Delaware and Hud-

son Canal railroad and mining development had been brought so near to completion and productive use, by the expenditure of a stockholder capital, that only \$300,000 were required to bring into operation this great enterprise of delivering anthracite coal on the waters of the Hudson River, and by that river at tide-water at New York.

But so limited were the financial resources of the time, that it was found necessary to apply to the Legislature of the State of New York for the loan of the credit of the State to raise \$300,000. In this application it was found necessary to meet the representations, afterward found to be gross misrepresentations, of those who took great pains to prevent any appropriation of money, private or public, to an enterprise so full of uncertainty. The representation made it necessary to prove that the coal transported would *burn*. Under these circumstances I was invited to pass a few weeks at Albany, to be of such use as might be.

When the time came that one of the locomotives was to be sent by river and canal to Honesdale, the "Stourbridge Lion" was sent.

How it happened that the "Stourbridge Lion" was sent I have no knowledge.

In reference to future events, so near by, it is to be regretted that one of the Stephenson locomotives was not sent, and for the reason that the locomotives built for the Delaware and Hudson Canal Company by Stephenson were the *prototypes* of the locomotive "Rocket," whose performance in October of the same year so astonished the world.

The two locomotives from Stephenson that were in New York early in the year 1829, and therefore prior to the trial of the locomotive "Rocket" in October of that year, were identical in boiler, engines, plan, and appurtenances with the "Rocket";

and if one of the two engines in hand ready to be sent had been the one used on August 9th, the performance of the "Rocket" in England would have been anticipated in this country.

To present the time and incidents of the "Stourbridge Lion," the first locomotive run on this continent, I have to continue my personal narrative.

THE FIRST LOCOMOTIVE RUN ON A RAILROAD ON THIS CONTINENT,  
AUGUST 9, 1829, AT HONESDALE, PA., ON THE RAILROAD OF  
THE DELAWARE AND HUDSON CANAL COMPANY.

Early in the summer of 1829 I had received the appointment of Chief Engineer of the South Carolina Railroad, a road to extend from Charleston, on the ocean, to a point opposite to Augusta, Ga., on the Savannah River, a road of about 150 miles in length, but I was not to go to Charleston to commence my duties until September. Being thus at liberty in July and August, I volunteered to go to Honesdale and take charge of the transfer of the locomotive from the canal-boat to the railroad track, within twenty feet and about eighteen feet above the level of the canal-boat.

The line of road was straight for about 600 feet, being parallel with the canal, then crossing the Lackawaxen Creek, by a curve nearly a quarter of a circle long, of radius 750 feet, on trestle-work about thirty feet above the creek, and from the curve extending in a line nearly straight into the woods of Pennsylvania.

The road was formed of rails of hemlock timber in section six by twelve inches, supported by caps of timber ten feet from centre to centre. On the surface of the rail of wood was spiked the railroad iron—a bar of rolled iron two and a quarter inches wide and half an inch thick.

As the locomotive was seen in mid-air, in its transference from the canal to the railroad, the opportunity was had to see that the axles had an unyielding *parallel* position, there being no king-bolt that provided facility for passing round the curve, and that, therefore, the four wheels holding their rigid position were to be forced round the curve by the power of the steam-engine. The locomotive thus seen altogether impressed the lookers-on as being of great weight. The road having been built of timber in long lengths, and not well-seasoned, some of the rails were not exactly in their true position when the time came that they were to carry the locomotive in its onward movement.

Under these circumstances the feeling of the lookers-on became general, that either the road would break down under the weight of the locomotive, or, if the curve was reached, that the locomotive would not keep the track, and in its onward motion without support it would dash into the creek with a fall of some thirty feet.

On my part, I knew that the road would carry the locomotive safely, and that the curve would be passed without any difficulty.

But when the time came, and the steam was of the right pressure, and all was ready, I took my position on the platform of the locomotive alone, and with my hand on the throttle-valve handle, said : " If there is any danger in this ride it is not necessary that the life and limbs of more than one should be subjected to that danger ; that, having no doubt whatever, I was about to take the ride entirely alone, and that the time would come when I should look back with great interest to the ride that was now before me."

The locomotive, having no train behind it, answered at once

to the movement of the hand, and there being no doubt as to the result, a motion was had at once in which there was not any evidence of distrust; soon the straight line was run over, the curve was reached and passed before there was time to think as to its not being passed safely, and soon I was out of sight in the three miles' ride alone into the woods of Pennsylvania.

I had never run a locomotive nor any other engine before, I have never run one since; but on that 9th of August, 1829 I ran that locomotive three miles and back to the place of starting, and being without experience or a brakeman, I stopped the locomotive on its return at the place of starting. After losing the cheers of the lookers-on, the only sound, in addition to that of the exhaust steam, was that of a timber structure when the parts are brought into the bearing state.

Over half a century passed before I again revisited the track of this first ride on this continent. Then I took care to walk over it in the very early morning, that nothing should interfere with the thoughts and feelings that, left to themselves, would rise to the surface, and bring before me the recollections of the incidents and anticipations of the past, the realization of the present, and again the anticipations of the future.

It was a morning of wonderful beauty, and that walk alone will, in time to come, hold its place beside the memory of that ride alone over the same line, the interval being more than fifty years.

Again, in order to present the facts that it is the object of this narrative to present, I have to refer to my personal acts as a civil engineer.

In September of 1829 I was at Charleston, S. C., to enter on my duties as Chief Engineer of the South Carolina Railroad. I had already learned the general character of the country that

the road was to pass through, and the first question to be decided was that of the *motive power* to be used. I was prepared to submit a report on the subject at once. But before stating the character of that report and the decision of the board, it is pertinent that it be clearly understood what was the state of the question on both sides of the Atlantic as to the motive power to be used on a railroad intended for general freight and passenger transportation.

On this side of the water some sixteen miles of the Baltimore and Ohio road had been constructed, and was worked by horse power.

On the other side of the Atlantic, the Liverpool and Manchester Company was the only company that had the subject under consideration, but as yet had not come to a decision, although their Chief Engineer, George Stephenson, was the able and earnest advocate of the locomotive.

In their measures to have before them the fullest information on the subject, the company submitted the question of the motive for the Liverpool and Manchester Railroad to two eminent civil engineers for their judgment, after the most thorough examination.

REPORT OF TWO EMINENT CIVIL ENGINEERS IN FAVOR OF STATIONARY ENGINES ACTING THROUGH LONG ROPES.

The two engineers were James Walker, of London, and John U. Rastrick, of Stourbridge.

The two engineers concurred in an elaborate report, presenting their conclusion and plans in great detail.

That conclusion was not in favor of locomotive power, but was in favor of a succession of stationary engines transmitting a tractive force by use of long ropes.

No more impressive reference to the *undeveloped* character of the locomotive in England in 1825, can be presented than that found in the following extract from "Wood on Railroads," 1825:

"Nothing can do more harm to the adoption of railroads, than the promulgation of such *nonsense* (italic in the original) as that we shall see locomotives travelling at the rate of twelve miles per hour."

It is hardly necessary to add, that in a second edition a few years later, this caution of "Wood on Railroads" is not to be found.

In addition to the preceding, as showing that the locomotive had not in 1828 the position, in fact and feeling, that it rose to in a very few years, and so greatly below that it holds now, there is the remarkable item of history, that in 1829, the Liverpool and Manchester Railroad Co. deemed it necessary to appeal to the mechanical ability of the country, by a premium of \$2,500, and the purchase of the locomotive, to obtain a locomotive that would haul on a level railroad *three times its own weight at ten miles the hour.*

To the knowledge of a general character as presented above, was added the personal knowledge of the locomotive as a tractive power as briefly presented herein, and the results of a practical study of the locomotive in its daily operation, at the only place in the world where the locomotive was in operation to be studied.

*of Mr. Alex.*  
REPORT TO THE SOUTH CAROLINA RAILROAD COMPANY, IN SEPTEMBER, 1829, IN FAVOR OF LOCOMOTIVE POWER AS THE TRACTIVE POWER ON THEIR RAILROAD OF 150 MILES LONG, FOR GENERAL FREIGHT AND PASSENGER TRANSPORTATION.

In that report was presented an estimate of the cost of transportation by horse power, and by locomotive power. The esti-

mate of cost by locomotive power was based on facts obtained on the Stockton and Darlington Railroad.

The result of that comparison was in favor of locomotive power, and the report contained a decided recommendation that locomotive power should be the power to be used on the South Carolina Railroad.

But the basis of that official act was not the simple estimate resting on the facts as they existed on the Stockton and Darlington Railroad, but, as was stated in the report, was on the broad ground that in the future there was no reason to expect any material improvement in the breed of horses, while in my judgment the man was not living who knew what the breed of locomotives was to place at command. Contrast the eight-wheel locomotive of this day with the four-wheel locomotive of the Stockton and Darlington Road, and find some evidence that the position then taken was well taken, and then bear in mind that *the end is not yet.*

This report was submitted at a full meeting of the Board, every member in his seat and the President in his chair. Without leaving their seats the decision was unanimous.

The resolution then passed, and placed on record, was the first act by a corporate body in the world to adopt the locomotive as the tractive power on a railroad for general passenger and freight transportation.

#### THE SOUTH CAROLINA RAILROAD—ITS CONSTRUCTION.

The South Carolina Railroad was of the age of wooden rails capped with iron. Confidence and capital had not yet reached the growth to make an iron track of the most modest weight per yard a possibility, and steel rails were as unthought of as the telegraph.

On timber rails, six-inch by twelve-inch section, iron bars two and a half inches by half an inch were spiked. The wood was the Southern pine, the hard, resinous surface of which was as suitable for the iron bars as wood could be.

I desired to use iron of the same width and thickness, but with a flange on one edge, but the cost per mile multiplied by 150 had too large a product for the treasury of the company; and the expense was incurred only on the curves, which being few and small in extent, the expense was admissible.

The limit of weight under each wheel where the road was of the material and combination of necessity used, and the equal necessity of more power in one locomotive and under the command of one engineer, led naturally to the combination allowing the use of more wheels, and thereby providing more boiler, and therewith a less severe action on the road than was the case with the four-wheel locomotive with its overhanging fire-box.

REPORT TO SOUTH CAROLINA RAILROAD COMPANY AS TO THE NECESSITY OF SIX AND EIGHT-WHEEL LOCOMOTIVES.

The necessity of such provision led to the submission of a special report on the subject, in which the necessity was fully presented, and in which were described the parts and combinations by which provision was made for the change in the direction of road and the changes in grade, accompanied by the plans in detail.

The provisions thus made and introduced are those now in use in six and eight-wheel engines. In the freedom from severe action on the road was attained a result of specially great value when the road was a combination of wood and iron. The authority to incur the responsibility and expense was not easily obtained. The fact that the combination was new was almost

too great an objection for the necessity, plain as that necessity was.

The special objects sought in the six and eight-wheel combination were fully attained, viz.: that of a locomotive of the steam-making capacity, determined by the weight to which each of eight wheels was limited by the material and construction of the railroad, together with the equal distribution of the weight, and the necessary provision for changes in direction and changes in grade. Since that day the numerous improvements of the eight-wheel locomotives, especially in this country, have sustained what was introduced at so early a date, and again it is to be said, "The end is not yet."

One result of the early introduction of the eight-wheel locomotive has been of indirect benefit to every railroad corporation in the country.

The well-informed in the railroad history of this country will recollect the successive trials in connection with the use of the eight-wheel passenger cars, claimed to be made under valid patent. In the four-wheel engines the boiler carried the cylinders, and was, in fact, the frame carried by the running gear. In the eight-wheel engine the boiler in like manner carried the cylinders, and, in fact, was the frame carried by the swiveling trucks.

To form the eight-wheel passenger car it was only necessary to substitute for the boiler a long body of a passenger car, to be carried by the same swiveling trucks, and the eight-wheel passenger car existed. The models presenting this substitution, in court decided the question.

The first time over 100 miles were run in continuous line was on the South Carolina Railroad.

It will be readily understood that in this early use of a rail-

road by locomotive power, the *railroad appliances* of various kinds were matters of necessity, but without antecedents. To any one who may happen to know what was *devised* and *done* at that early day, it is pertinent and fair to say that the engineer on whom rested the responsibility of providing the indispensable, also knew with what difficulty the capital, in that day of small capital and little confidence, had been provided by subscription to the stock of the company, and with what greater difficulty any addition to that capital could be had until success had attended the original sum provided. It was, therefore, an indispensable condition of every plan to be devised that its cost must come within the capital provided.

With such determination was this condition kept in view, that it was a pleasantly repeated remark, in after times, for the engineer to be introduced by a former director, as the engineer who had built and put in operation a railroad within his estimate.

#### TRIAL OF LOCOMOTIVE SERVICE IN THE NIGHT.

To one incident in this early use of the locomotive on a long road for general freight and passenger transportation, reference will be made, not as of any value in itself, but in this case as of interest in my recollection of the attendant circumstances.

That the locomotive was to be used in the night, and during the whole night, was plainly to be anticipated. It was thought well to make trial of such running by night, that it might be known what it was necessary to provide. For such trial two platform cars were placed in front of the locomotive. On the forward platform was placed an inclosure of sand, and on the sand a structure of iron rods somewhat of urn shape. In this structure was to be kept up a fire of pine-wood knots. Suitable signals as to the rate of speed, etc., were provided. The day preceding

the evening of the trial closed in with as heavy a fog as I have ever seen, and I have seen a first-class London fog. But the fog did not prevent the trial when the appointed time came.

The country to be run through was a dead level, and on the surface rested this heavy fog; but just before we were ready to start, the fog began to lift and continued to rise slowly and as uniformly as ever curtain left surface of stage, until about eighteen feet high; there it remained stationary, with an under surface as uniform as the surface it had risen from. This under surface was lit up with radiating lines in all directions with prismatic colors, presenting a scene of remarkable brilliancy and beauty.

Under this canopy, lit on its under surface, the locomotive moved onward with a clearly illuminated road before it; the run was continued for some five miles, with no untoward occurrence, and I had reason to exclaim, "The very atmosphere of Carolina says, 'Welcome the locomotive.' "

The five years that follow the five years that have been thus summarily referred to are not without interest in relation to the part taken in this country in the further development of the Railroad Era. And when we come to the time when the night was made ~~available~~ to the travellers on Railroads with so great economy of time and with so much comfort, it is found that very much of personal interest originated in this country.

It is well and pleasant to know that of the two English-speaking peoples by whose action the Railroad Era was opened and has been developing, we, on this side of the waters that intervene, but do not separate, have in the past fully done our part.

To extend this knowledge to many to whom it will be of interest is the object of these few pages put into print.

They who in the knowledge of the past and study of the

present are prepared to speak of the future, may say "that while the end is not yet, the place in this great Era earned by this country in the past will be sustained in the future."

#### RAILROAD GAUGE.

The distance from edge to edge of the two iron rails that form the railroad track, is called the railroad gauge.

As the gauge of the railroads in the North in the United States was practically, it may be said incidentally, decided during the five years referred to, it is pertinent to these statements to refer to its origin.

The gauge of the Stockton and Darlington Railroad, a coal mine railroad, determined the gauge of the railroads in the United States.

When George Stephenson, having been chief engineer of the Stockton and Darlington Railroad, became the chief engineer of the Liverpool and Manchester Railroad, he adopted four feet eight and a half inches, the gauge of the Stockton and Darlington Railroad, as the gauge of the first railroad to be constructed for general freight and passenger transportation. There is no statement as to the grounds of this important decision.

It is plain that there were some conditions to be complied with in connection with the Stockton and Darlington road, that made the use of the half inch of value. It is also plain that there were no such conditions on the line of the Liverpool and Manchester Railroad. Why that liberty was not used we have no knowledge.

When the time came for action as to the width of gauge in the United States, at the North, there was also no limitation, but again the coal mine railroad gauge of four feet eight and a half inches was adopted, because it was the gauge of the Liver-

pool and Manchester Railroad, and in their turn as other railroads were built at the North, the four feet eight and a half inch gauge was adopted. In only two cases were there omissions to follow the precedent thus established.

One was by the South Carolina Railroad Company, who, in accordance with the report of the chief engineer, adopted five feet as the width of gauge on their railroad.

In that report were presented, as far as known at that time, the conditions to be complied with in reference to the locomotive, the railroad cars, freight and passenger, with due reference to cost of road-bed.

This action of the South Carolina Railroad determined the gauges of the Southern road, which continues of that gauge to this time; but it is to be anticipated that the commercial advantages of uniformity of gauge will eventually narrow the gauge down to the coal mine gauge of four feet eight and a half inches.

The other case referred to is that of the Erie Railroad. The gauge adopted for that road was six feet, known as the Broad Gauge. Of that gauge were the seventy-five miles, known as the Eastern Division, and used for many years.

When the time came that it was believed that provision had been made to build the road to Lake Erie, the question was raised again as to width of gauge. Being at the time consulting engineer of the company, the question was referred to me.

In the report submitted in reply, the conditions as to locomotives and railroad cars were made the basis of the judgment, and again the five-foot gauge was the conclusion.

The conclusion was concurred in as an engineering question, but the action of the company was to adhere to the broad gauge, and mainly for financial reasons.

Many years afterward the commercial advantages of uniformity of gauge caused the change of gauge to the four feet eight and a half inch gauge.

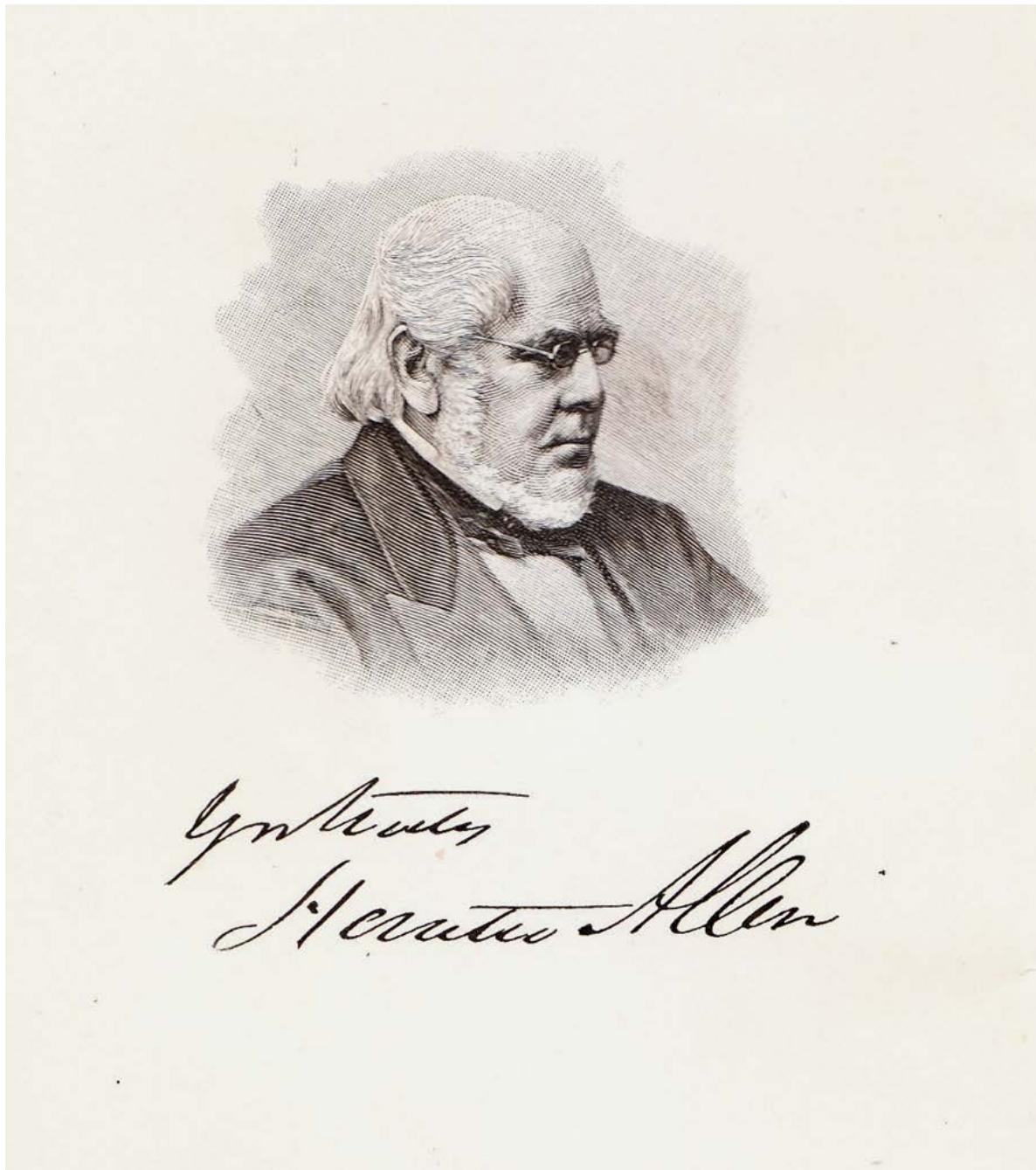
HORATIO ALLEN.

PERSONAL REFERENCE TO THE DELAWARE AND HUDSON CANAL COMPANY.

The reference in the preceding statements to the early action of the Delaware and Hudson Canal Company in the use of railroad transportation, and specially to their order for first locomotives, after the locomotives in use on the Stockton and Darlington Railroad; and the reference to my connection with the construction of the Delaware and Hudson Canal, which led to the important railroad trusts placed in my hands, afford me the opportunity of expressing therewith, what I have always felt, my appreciation of the professional obligation I was under to the Delaware and Hudson Canal Company, and to their Chief Engineer, John B. Jervis, by whose counsels their action was determined.

HORATIO ALLEN.

2. On Saturday, February 24, 2018, we discovered in the archives of the Wayne County Historical Society a copy of M. N. Forney's *Memoir of Horatio Allen*, which was originally written for and published in the *Railroad and Engineering Journal*. This is an important document in any study of the Stourbridge Lion and we present here, therefore, a copy of the complete document.



MEMOIR  
OF  
HORATIO ALLEN.

BY  
M. N. FORNEY.

Printed by THE BURR PRINTING HOUSE,  
18 Jacob Street, New York.

**Jacob Street** was a narrow, one-block street that connected Ferry and Frankfort Streets about two blocks north of the present Pearl Street. The street stood at the center of the city's early tanning industry, and was originally called Leather Street in reference to the tanners and glovers who had operations in the area.

## PREFACE.

THE following Memoir of the life and professional career of my friend Horatio Allen was originally written for the *Railroad and Engineering Journal*, and was published in its pages. It was prepared, and is reprinted in its present form, in grateful remembrance of many words and acts of encouragement and kindness for which the writer is indebted to him.

M. N. F.

## HORATIO ALLEN.

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AT the close of the last day of the year 1889, Horatio Allen, one of the oldest engineers in the world, passed away from earth. His life began with the opening of the century, and was identified with many of its earlier engineering enterprises, and he took a leading part in the introduction of railroads and locomotives in this country.

He was born in Schenectady, N. Y., in 1802, and was consequently 87 years old last year. He was the son of Dr. Benjamin Allen and Mary Benedict Allen. His father was professor of mathematics at Union College, at Schenectady, and afterward established a large school at Hyde Park, N. Y. The son therefore had excellent educational advantages in early life, and was sent to Columbia College in New York City, from which he graduated about 1823, taking high rank in mathematics. He studied law for about a year, but after a short time decided to make engineering his work, and entered the employment of the Chesapeake & Delaware Canal Company under Judge Wright, then Constructing Engineer of that work. He was sent to St. George's, Del., and within two weeks was placed in full charge of a party. In the autumn of 1824 he was made Resident Engineer of that work. A year later he was appointed Resident Engineer of the summit level of the Delaware & Hudson Canal, under John B. Jervis, then Chief Engineer of the Company. While Mr. Allen was engaged in this position his attention, and that of other engineers in America, was attracted to the performance of locomotives in England. His early relation to these events may best be told in his own words, quoted from a pamphlet,

In 1825, Horatio Allen was named Resident Engineer of the D&H Gravity Railroad's "Summit Level" (Level No. 5 in the 1829 configuration), under John B. Jervis, then Chief Engineer of the D&H. In this document by Forney is the only text wherein we have seen stated that very important fact in the railroad career of Horatio Allen.

with the title "The Railroad Era," which he published a few years ago. In this he said :

" During the years 1826 and 1827 the use of the locomotive on the Stockton & Darlington Road, England, had become known to many, and especially to civil engineers in this country, and among others to myself, then a Resident Engineer on the line of the Delaware & Hudson Canal, the great engineering enterprise of the time, the first of the great works, canal and railroad, that were to bring the anthracite coal of the valley of the Susquehanna into the valleys of the Delaware and of the Hudson and to the ocean.

" Such consideration as was within my power led me to a decided conviction as to the future of the locomotive as the tractive motive power on railroads for general freight and passenger transportation, as it had begun to be for mine transportation. . . .

" Early in the year 1827 I had given all the attention that it was in my power to give, and having come to conclusions as to the locomotive, that all subsequent experience has confirmed, and believing that the future of the civil engineer lay in a great and most attractive degree in the direction of the coming railroad era, I decided to go to the only place where a locomotive was in daily operation and could be studied in all its practical details.

" Closing my service on the Delaware & Hudson Canal, some two months were appropriated to certain objects and interests, after which I was again in New York, preparatory to going to England.

→ " On my return to New York from these visits, I found that it had been decided by the Delaware & Hudson Canal Company to intrust to me, first, the having made in England for that Company the railroad iron required for their railroad. . . . and having built in England, for the Company, three locomotives, on plans to be decided by me when in England.

" This action of the Delaware & Hudson Canal Company was on the report of their Chief Engineer, John B. Jervis, and thus it occurred that the first order for a locomotive engine, after the locomotives on the Stockton & Darlington Road were at work, came from an American company, on the report of an American civil engineer."

Horatio Allen: ". . . it had been decided by the Delaware & Hudson Canal Company to intrust me first, the having made in England for that Company the railroad iron required for their railroad. . . and having built in England, for the Company, three locomotives, on plans to be decided by me when in England [emphasis added]."

The following are copies of some old papers, which were preserved by Mr. Allen, relating to this commission. One of them is indorsed :

"1828.--EXTRACTS FROM THE REPORT OF THE COMMITTEE SANCTIONED BY THE BOARD REFERRED TO IN MY LETTER TO MR. ALLEN.

"J. BOLTON, *President.*"

The following is a copy of the paper which evidently embodies the instructions of a committee to Mr. Allen for the execution of his commission in England :

EXTRACT, ETC.

That Horatio Allen, Esq., Civil Engineer, has agreed to go to England as the Agent of the Company to procure the railroad plates and perform such other services in relation thereto as may be required of him. The Company to pay his passage out and home and his expenses during his stay, allowing him to remain three months, for the purpose of attending to the Company's business and acquiring information. His expenses on the whole not to exceed \$900, and on his return he will communicate to the Company all the information he may acquire that may be useful to the work in which they are engaged.

That they deem it advisable to authorize Mr. Allen to procure one locomotive engine complete, as a pattern, and that the Chief Engineer is making inquiries to ascertain whether it may not be expedient to authorize the construction of all the locomotive engines in England.

That it is deemed advisable to suspend the making of the wheels and axles of the coal wagons until information be received from Mr. Allen of the cost of those articles in England, and of the latest improvements that have been adopted in the manner of connecting the wheels and axles. The engineer in his report recommends wheels of  $3\frac{1}{2}$  ft. diameter; but his mind is not definitely made up on this point. He will investigate the matter further and report the result.

That Mr. Allen be instructed to procure the railroad plates of the length recommended in the report of the Chief Engineer; the ends to be cut and fitted into each other and the holes made for the fastenings, as recommended in the same report; that the rounding of the edges of the plates will be advantageous, but is not so indispensable as to induce the committee to recommend that the plates be thus formed without limitation as to the increase of expense and time that may be required therefor.

The three "levels" on which John Jervis proposed to use mobile steam engines: "...the Chief Engineer [Jervis] is of the opinion that on two of the levels west of the summit [6-mile level, 4-mile level] and on one east of the summit [Level No. 5, the Summit Level] machinery worked by engines may be advantageously substituted for the horse-power first proposed, but that the form of the country will not admit of such substitution on the levels west of the summit."

That there is much force in the reasoning of the Chief Engineer in favor of dispensing with any allowance for expansion and contraction of the plates, in forming the holes for the fastenings, yet the committee are of opinion that it would be safest to make such allowance, and the Chief Engineer has devised a plan for effecting it which the committee believe will be successful. This plan will be communicated to Mr. Allen and he may then be allowed very safely to adopt that or any other plan which may be found more economical.

The committee being now satisfied that an economical plan will be devised for forming the holes in the plates so as to allow for contraction and expansion, they unite in opinion with the Chief Engineer that the fastenings of the plates will be best effected with screws.

→ That the Chief Engineer is of opinion that on two of the levels west of the summit and one east of the summit machinery worked by engines may be advantageously substituted for the horse-power first proposed, but that the form of the country will not admit of such substitution on the other levels west of the summit.

EXTRACT FROM THE MINUTES OF JANUARY 10, 1828.

S. FLEWELLING,

*Treasurer of the Delaware & Hudson Canal Company.*

The rounding of the edges or omitting it is left to Mr. Allen. The last paragraph is introduced to suggest to Mr. Allen that information is wanted. In the letter to Messrs. Brown, I say: "Mr. Allen is authorized to procure such drawings of machinery and designs connected with railroads, canals, and the raising and transporting of coal as he may deem proper."

J. BOLTON.

A letter from Mr. Jervis, the Chief Engineer, which apparently accompanied the preceding "Extracts from the Report of the Committee," is endorsed:

"1828.—MR. JERVIS'S LETTER TO MR. ALLEN REFERRED TO IN MY LETTER TO MR. ALLEN.

"J. BOLTON."

The letter is as follows:

*To Horatio Allen, Esq.*

DEAR SIR: The Board of Managers for the Delaware & Hudson Canal Company, having made an engagement with you to proceed to England as their Agent to procure certain articles

for the proposed Carbondale Railroad, and also such information as may be useful in the construction and management of said railroad ; I am therefore directed by the said Board of Managers to furnish you such information and instruction as will further their object.

The Board of Managers have determined on procuring their iron plates for the railway tracks as one item.

The length of plates to be from 12 to 14 ft., as you may find most convenient for rolling them through on the edges ; to be  $2\frac{1}{4}$  in. wide on the bottom and 2 in. on the upper surface and  $\frac{1}{2}$  in. thick, with the upper edges rounded and the end finished as represented on the plan. Holes to be drilled for the screws with countersunk heads at each end of every bar and at intermediate points 18 in. apart. After the holes and countersink have been drilled in a circular form, then a rimmer of the proper form to fit the countersink and hole for the neck of the screw to be put in to cut the aperture longitudinally. To effect this the rimmer must be put in and then firmly fixed to its position and the bar made to move toward it in the direction of its length, about  $\frac{1}{8}$  or  $\frac{1}{4}$  of an inch. This may be reduced as you recede from its end to the center ; but as it is likely to create confusion to attempt any economy in varying the length to be rimmed, it will be better to have all the holes rimmed alike.

#### LOCOMOTIVE STEAM ENGINES.

It is desirable, in order to dispense with the tender carriages, to have a water tank fixed to the engine carriage that will contain about 100 gals. If made in two parts, of sheet-iron, it will weigh, with its hanging or supporting irons, about 250 lbs., and the water about 1,000 lbs., making together about 1,250 lbs. To increase the capacity of the tank to 120 or 150 gals. would add but little to its weight. I see no difficulty in attaching such a tank to the engine carriage, and you will determine whether it will be most convenient to support it over the axles or suspend it under them ; being divided into two equal parts it may be placed on each side of the revolving chains, with a pipe to pass the water from one to the other. If the weight of the engine should admit of it, it will be preferable to make the tank sufficient to contain 120 to 150 gals. The pump of the engine to supply the boiler with water from the tank should be calculated to work one-quarter faster than necessary for a regular supply in order to provide for a waste of steam when the engine stops, and to be constructed so as to work by hand, which will be necessary at certain times. The boiler will not require a

capacity for any considerable quantity of water beyond what is necessary for the work, as the pump will regularly supply, except when the carriage stops at the end of the road, at which time it is supposed to have supplied a surplus adequate to the waste that will take place during delay. The stoppages may be estimated at one-quarter the whole time; on the shortest section 10 minutes, on the longest 20 minutes. The weight of engine, carriage, and water, if placed on six wheels, to be from 6 to 7 tons, but  $6\frac{1}{2}$  tons preferred. If it should be found that a six-wheel carriage has any important difficulty in working well on curved roads, that in your judgment would counterbalance the advantage of a heavier engine and give the preference to the four-wheel carriage, then the weight must not exceed  $5\frac{1}{2}$  tons; but the six-wheel carriage will be preferred if it can be made to work. If a six-wheel carriage the axle need not exceed  $2\frac{3}{4}$  or 3 in. at the bearing. The diameter of the wheels 3 to 4 ft., as you find most approved from experiments in England for similar purposes and rate of traveling, say  $3\frac{1}{2}$  to 5 miles per hour. The power of the engine, such as will carry 800 lbs., at the rate of 4 miles the hour, or what is nearly the same thing, 640 lbs. at the rate of 5 miles the hour. I think about 4 miles the hour a good velocity for the work contemplated, but the range above given will allow you to vary this, as you may find most expedient, in relation to several points that you will perceive to have a bearing on this question. The diameter of the wheels of the engine carriage will affect the velocity, or distance traveled at a given number of strokes of the engine, but I would take 3 ft. as the minimum diameter and make them as much larger as the arrangement of the working parts will admit, without giving too great a velocity. The length of the stroke must depend something on the facilities of securing firmness to the cylinder, and this may lead you to prefer a larger or smaller diameter for the cylinder; the pressure of the steam has also a bearing on the question; on account of the weight I think the cylinder should not exceed 8 in.

To elucidate my views more fully, I will state what appears to me a suitable arrangement. Length of stroke 27 in. and 40 strokes per minute; two 8 in. cylinders, pressure of steam 60 lbs. per square in. This will give 2,400 revolutions per hour. Area of cylinder  $8^2 \times .7854 \times 2 = 100.5$  sq. in. A double stroke equal 4.5 ft.; then  $100.5 \times 4.5 \times 60 \times 2,400 = 65,124,000$  lbs. raised 1 ft. But by the experiments of Wood we may only take 30 per cent. and  $65,124,000 \times .30 = 19,537,200$  raised 1 ft., which is equivalent to 800 lbs. carried or raised 24.421 ft., equal to 4.62 miles per hour. Now  $24,421 \div 2,400 = 10.17$

ft., the space moved over by the carriage at each revolution of the engine, and of course the diameter of the wheel must be 3.25 ft. If there should appear a difficulty in securing a cylinder with proper stability for the above length of 27 in., it may be advisable to make the stroke 25 in. Then, all other points remaining the same, the power of the engine will only be equal to carry the same load of 800 lbs.  $4\frac{1}{4}$  miles, and the wheels of the carriage must be reduced to 3 ft. diameter. It may be found expedient to have larger wheels and travel at the rate of 5 miles per hour, with a proportional load. Suppose cylinder  $7\frac{1}{2}$  in. diameter, 27 in. stroke, pressure 60 lbs., 40 double strokes per minute, or 2,400 per hour. Then  $7.5^2 \times .7854 \times 2 = 88.34$ , say area of two cylinders  $88 \times 60 \times 4.5 \times 2,400 = 57,224,000$  lbs. raised 1 ft.; 30 per cent. is 17,107,200 lbs. raised 1 ft., and is equivalent to 648 lbs. carried 5 miles, will require the carriage-wheel to be  $3\frac{1}{2}$  ft. diameter. The power of the engine will be a trifle less than the last calculation before it. But if you find it necessary to reduce the length of stroke to 25 in., it will not give the power we prefer with less than 8-in. cylinders. If, as before observed, you find difficulties that have not been anticipated in working a six-wheel carriage, that compels the use of a four-wheel carriage, the power of the engine must be reduced in order to reduce the weight of the engine and the carriage. If you can avoid it, I think it better not to calculate for more than 40 double strokes per minute. I believe the above will give you a sufficient view of what will answer our object, and you must vary as you find the experience of England and your own judgment may direct. I am of opinion that the furnace had better be of the oval form laid flat, otherwise the furnace may be the same as for bituminous coal. It is supposed anthracite coal does not require so high a chimney as other fuel, but I am not possessed of any particular facts on this subject; I presume you can have the chimney so constructed that an additional piece may be attached if it is found on trial to require it. On this presumption I would not have it more than 10 ft. high. As the height of chimney will affect the calculation of bridges, it is advisable to understand this question as early as possible.

The width in the clear between the rails is 4 ft. 3 in. The greatest curvature of that part of the road on which locomotive engines are to be used is that which gives a versed sine of 1 ft. on a chord of 59 ft.; but there is only a single instance of this curvature, arc of 15 chains. The curvature which occurs in several instances is a versed sine of 1 ft. on a chord of 66 ft. A 10-ft. chord exactly  $\frac{1}{3}$  in.

It is determined by the Board that you will procure from England one locomotive engine with carriage complete for work. The three others that will be wanted to depend on the cost at which they can be obtained and delivered at New York. It is supposed that they can be obtained of American manufacturers for \$1,800, and I presume it will not be economy to procure them from England at a greater cost, unless you perceive a superiority in the workmanship of English engines that in your opinion will justify the additional cost.

As a preliminary step I should advise, previous to the purchase of the locomotive steam engine, that you visit the Killingworth Railroad near Coventry, the Hetton Railroad, and Darlington & Stockton Road; the two latter are near Sunderland. At Killingworth the locomotive engine is said to have been in regular use (working by the adhesion of the wheels) since the year 1814; but the Hetton Road is more in the character of the proposed work.

Although I am strongly of opinion that this will be the most convenient and economical power for the contemplated railroad, still you will perceive the propriety of availing ourselves of the experience of others in reference to its actual utility. If on examination you should find essential difficulties that we have not apprehended in the use of this means of transportation, and such as in your judgment would counterbalance their advantages, then it will be advisable not to make an engagement, but to communicate the result of your observations as early as possible.

#### RAILROAD CARRIAGES.

Inquire respecting the relative advantages of the fixed and revolving axle of common railway carriages; their operation on curved roads; the methods and facility of applying the brake; the manner of constructing and securing the axle to the wheel in both cases; facilities for oiling; the width of rim or track of wheels as compared to the width of rail; thickness, depth of projection and form of flange; breadth and thickness of spokes of cast and wrought iron; manner of handling and fastening the door in the bottom of the carriage to facilitate unloading coal.

It is deemed advisable to ascertain the cost of iron axle trees for the coal carriages made of iron equal in quality to Swedes or Russia iron, the bar  $2\frac{1}{2}$  in. square and the bearing  $2\frac{1}{2}$  in. diameter turned smooth. State the cost distinct for revolving and fixed axles; as you will perceive, the fixed axle will, on account of its longer bearing in the nave of the wheels, require more expense in turning. Examine whether fixed axles are

tapered from the shoulder to the outer bearing in the nave, or whether the axle is of uniform diameter through the nave of the wheel, and in what manner the wheel is secured to the axle, and box of carriage through the axle.

Very respectfully, your friend and obedient servant,  
JOHN B. JERVIS.

NEW YORK, January 16th, 1828.

The duties, say  $27\frac{1}{2}$  per cent., exchange, interest, and other charges, will together amount to about 45 per cent. on the cost of the engine.

"It was under these favorable circumstances," Mr. Allen says, "that I left New York in January, 1828, and within two days after my arrival at Liverpool I made the acquaintance of George Stephenson, in the most agreeable relations, and from that time, during my stay in England, I received from him every kindness in his power, and all the aid to what I had come so far to seek that was at his command at Liverpool on the Stockton & Darlington Railroad and at Newcastle, at that time the center of all that was in progress in railroad and locomotive matters."

To get an idea of "the state of the art" of locomotive construction at the time Mr. Allen arrived in England, in 1828, it must be remembered that it was before the celebrated trial of the *Rocket* on the Liverpool & Manchester Railway, which did not occur until October 14, 1829. The form of locomotive engine which is described in Wood's "Treatise on Railroads," and which that Author says, "with trifling modifications," was used on the Stockton & Darlington, the Killingworth, and other railroads in England, had cylindrical boilers, with hemispherical ends and a single cylindrical tube of about 2 ft. diameter, which passed through the boiler and was placed within 2 in. of the bottom. In one end of this tube the fire was placed and the other end was terminated by a chimney. In some engines this tube, instead of passing through the boiler, was made to return and pass out at the same end as the fire-grate. The engines had four wheels and two cylinders, which were placed vertically and attached to the top and partly within the boiler, and were located on the longitudinal center line of the engine, one of them directly over each axle, the piston-rods working through the top cylinder heads with a long cross-head, which extended transversely

far enough so that the connecting-rods could be coupled directly to crank-pins to the outside of the wheels. The cranks on the two pairs of wheels were at first maintained at right angles to each other by an endless chain passing over cog-wheels fixed upon the axles of the engine. That Mr. Jervis contemplated some such arrangement as this is indicated by the fact that he speaks of "revolving chains" in his letter. Of these chains Mr. Wood says :

" However good in other respects, this chain had its defects, and it has been superseded by cranks and connecting-rod. By continued working the chain was apt to stretch, and a contrivance was resorted to, of the removal of the chairs (?) from each other, to tighten the chain ; but as this could only be done at certain periods, the chain was frequently getting slack. When this took place, and when the full power of one of the cylinders was applied upon one pair of wheels, while the other connecting-rod was upon the center, and therefore not capable of acting at all upon the other wheels, the rotation of the latter depended upon the action of the chains ; if the chain was, therefore, slack, it occasioned a slipping of the wheel until the links of the chain laid hold on the projection of this wheel in the direction in which the chain was moving round, and this slipping alternately occurred by each of the wheels in succession, as they became a predominant moving power. The chain was therefore laid aside."

To maintain the cranks on the two pairs of wheels at right angles to each other, "returned cranks" were attached to the outer ends of the crank-pins of one pair of wheels. These return cranks had what may be called secondary pins on their outer ends, which were placed at right angles to the main pin. These secondary pins were connected by coupling rods to the main pins on the other pair of wheels, and thus the two sets of main pins on the two pairs of wheels were kept at right angles to each other.

It should be observed that when Mr. Allen arrived in England the use of the multitubular boiler in locomotive engines was unknown, or was only talked about. In the engraving of the Killingworth engine in Wood's "Treatise," he shows and describes an exhaust-pipe which "is opened into the chimney, and turns up within it ;" but the

value of the steam blast was then not recognized. The locomotives which were known in America at that date were those which have been described. It is therefore not remarkable that Mr. Allen, then only 27 years of age, and feeling the responsibility of his position, should be governed by the instructions which he received when he left home. He therefore ordered of Messrs. Foster, Rastrick & Company, of Stourbridge, three locomotives of the Stockton & Darlington type.\* One of these (fig. 1) was the engine that afterward had the distinction of being the first one that was ever run in America. It had four coupled wheels, all drivers, driven by two vertical cylinders, with 36-in. stroke, placed at the back end and on each side of the boiler. The motion of the piston was transferred through two grasshopper beams above the cylinders, and from those beams by connecting-rods to the crank-pins on the wheels. The front end of the beam was supported by a pair of radius rods which formed a parallel motion. The spokes of the wheels were heavy oak timbers, strengthened by an iron ring bolted to the spokes midway between the hub and felloes, and the latter was made of strong timber capped by a wrought-iron tire. From the illustrations of this engine which have survived, the cranks on each pair of wheels were apparently at right angles to each other, otherwise it is not clear how the engine could start when they were on one of the dead points. The boiler was cylindrical and had several large flues inside.

After Mr. Allen arrived in England, as already stated, he made the acquaintance of George Stephenson, and from him received much valuable aid and advice. He visited Liverpool, the Stockton & Darlington Railway, and Newcastle. Locomotive engines had then been in successful

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\* In the latter part of his life, Mr. Allen was of the impression that one locomotive was ordered of this firm and two of Messrs. Stephenson & Co., of Newcastle, but an examination, since his death, of some correspondence on file in the office of the Delaware & Hudson Canal Company, has shown conclusively that three engines were built by the first-mentioned firm and one by the Messrs. Stephenson. This correspondence shows that the locomotive built by the Stephensons arrived in New York on board the ship "Columbia" about the middle of January, 1829. The first one of those, built by Foster, Rastrick & Co., arrived on board the "John Jay," May 13, of the same year; the second one on the ship "Splendid," about the middle of August, and the last one on September 17, on the "John Jay."

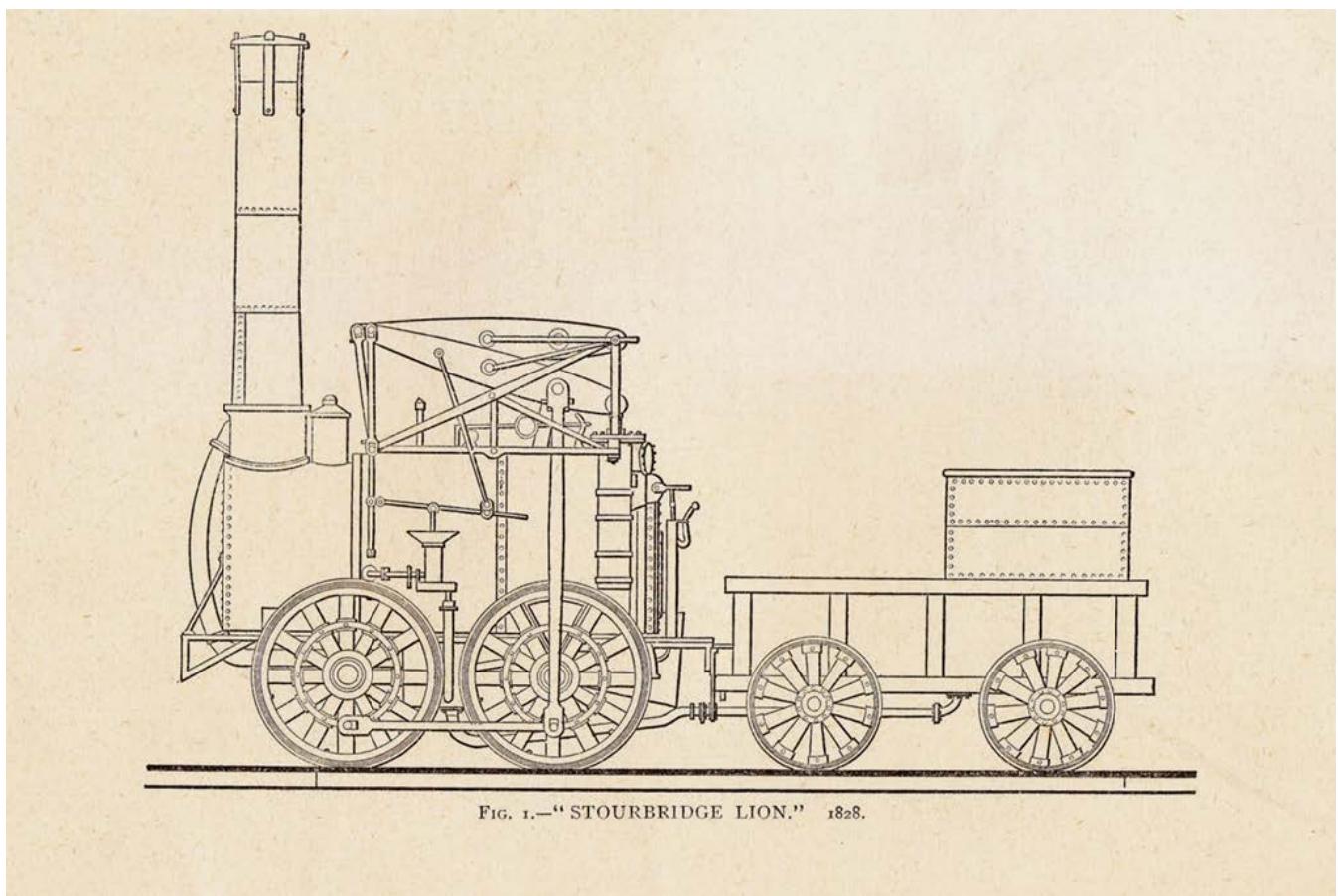


FIG. 1.—“STOURBRIDGE LION.” 1828.

use since 1814, and the subject of railroads was attracting great attention, not only in that country, but in America and the whole civilized world as well.

The following extract from a report of the Second General Meeting of the Liverpool & Manchester Railway, dated March 27, 1829, will show how the subject was then regarded. In this report it is said :

The nature of the *power* to be used for the conveyance of goods and passengers becomes now a question of great moment, on whatever principle the carrying department may be conducted. After due consideration the engineer has been authorized to prepare a locomotive engine, which from the nature of its construction, and from the experiments already made, he is of opinion will be effective for the purposes of the Company, without proving an annoyance to the public. In the course of the ensuing summer it is intended to make trials on a large scale, so as to ascertain the sufficiency, in all respects, of this important machine. On this subject, as on every other connected with the execution of the important task committed to his charge, the Directors have every confidence in Mr. Stephenson, their Principal Engineer, whose ability and unwearied activity they are glad of this opportunity to acknowledge.

On his arrival in England Mr. Allen found, as Mr. Wood, in the preface to his treatise says, that "The eyes of the whole scientific world were upon the great work of the Liverpool & Manchester Railway;" and as another writer of that period reported, "discoveries were daily made of new principles applicable to locomotives, and, extraordinary as they now are, in their power and velocity, great improvements may yet be reasonably anticipated." In England Mr. Allen spent considerable time in visiting the different roads then in operation, and in studying the performance of the locomotives in use. The kind of power to be used on the Liverpool & Manchester Railway was regarded as a question of great moment. In the spring of the year 1829 the Directors of that Company sent a deputation of their body to visit the lines where different varieties of motive power were employed. The only conclusion which they came to appeared to have been that, from the great amount of traffic anticipated upon the line, horses were inapplicable. The contest then being between

locomotive and fixed engines, in order to determine which of the two was the most suitable for the purpose, the Directors resolved to employ two practical engineers, Mr. James Walker and Mr. John W. Rastrick, to report which, under all circumstances, was the best description of moving power to be used. They reported against locomotive and in favor of stationary engines. Notwithstanding this report, the Directors did not feel themselves able to come to a decision on the subject—a leaning in favor of locomotive engines existing, it was said, in a majority of the Directors.

Mr. Allen made a contract with Messrs. Stephenson & Company, of Newcastle, for one more locomotive. This engine, he said, was ordered to be identical in boiler, engine plan, and appurtenances to the celebrated *Rocket*.

When completed the four engines were shipped to New York and arrived there during the year 1829. The *Stourbridge Lion*, it is said, was sent from the foot of Beach Street, in New York, to Rondout, and thence reshipped by canal to the track at Honesdale, where it made its celebrated first trip. Some of the other engines were for a time stored in the warehouse of Messrs. Abeel & Dunscom on the East side of New York. One of them was there raised up so that its wheels were not in contact with the ground and was exhibited in motion with steam on as a curiosity to the public. The singular part of this is that it is not now known what ever became of these engines. All trace of them has been lost as completely as though they had been cast into the sea.

Why the *Stourbridge Lion* was sent to Honesdale and not the Stephenson engine, which arrived in New York first, is not known. If this one, which has since passed into oblivion, had been selected for the first run we would have had the remarkable circumstance that a trial of an engine, which Mr. Allen said was built on substantially the plan of the famous *Rocket*, would have occurred in this country *before that* celebrated event took place in England.

"It is to be regretted," said Mr. Allen, "that one of the Stephenson locomotives was not sent, and for the reason, that they were the *prototypes* of the locomotive *Rocket*, whose performance in October of the same year so aston-

ished the world. If one of the two engines in hand ready to be sent had been the one used on August 9th, the performance of the *Rocket* in England would have been anticipated in this country."\*

The story of this first trial of the *Stourbridge Lion* has often been told. The engine received its name, Mr. Allen said, "from the fancy of the painter who, finding on the boiler end a circular surface, slightly convex, of nearly four feet diameter, painted on it the head of a lion in bright colors, filling the entire area."

The river and canal being closed by ice, it was not until the opening of navigation in 1829 that access was had to the railroad at Honesdale, Pa., which was then at the head of the canal and at the beginning of the railroad.

Being at liberty during July and August, Mr. Allen volunteered to go to Honesdale and take charge of the transfer of the locomotive from the canal-boat to the railroad track. Of the place where the trial was made he wrote:

"The line of road was straight for about 600 ft., being parallel with the canal, then crossing the Lackawaxen Creek, by a curve nearly a quarter of a circle long, of a radius of 750 ft., on trestle-work about 30 ft. above the creek, and from the curve extending in a line nearly straight into the woods of Pennsylvania.

"The road was formed of rails of hemlock timber in section 6 x 12 in., supported by caps of timber 10 ft. from center to center. On the surface of the rail of wood was spiked the railroad iron—a bar of rolled iron 2½ in. wide and  $\frac{1}{2}$  in. thick. The road having been built of timber in long lengths, and not well seasoned, some of the rails were not exactly in their true position. Under these circumstances the feeling of the lookers-on became general that either the road would break down under the weight of the locomotive, or, if the curve was reached, that the locomotive would not keep the track, and would dash into the creek with a fall of some 30 ft.

"When the steam was of right pressure, and all was ready, I took my position on the platform of the locomotive alone, and with my hand on the throttle-valve handle, said:

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\* See note on page 15.

' If there is any danger in this ride, it is not necessary that the life and limbs of more than one should be subjected to danger,' and felt that the time would come when I should look back with great interest to the ride then before me.

" The locomotive having no train behind it answered at once to the movement of the valve ; soon the straight line was run over, the curve was reached and passed before there was time to think as to its being passed safely, and soon I was out of sight in the three miles' ride alone in the woods of Pennsylvania.

" I had never run a locomotive nor any other engine before. I have never run one since, but on August 9th, 1829, I ran that locomotive three miles and back to the place of starting, and being without experience and without a brakeman, I stopped the locomotive on its return at the place of starting. After losing the cheers of the lookers-on, the only sound, in addition to that of the exhaust steam, was that of the creaking of the timber structure.

" Over half a century passed before I again revisited the track of this first ride on this continent. Then I took care to walk over it in the very early morning, that nothing should interfere with the thoughts and the feelings that, left to themselves, would rise to the surface and bring before me the recollections of the incidents and anticipations of the past, the realization of the present, and again the anticipations of the future.

" It was a morning of wonderful beauty, and that walk alone will, in time to come, hold its place beside the memory of that ride alone over the same line more than fifty years before."

Mr. Allen always took a delight in telling of this early event in railroad history. When the enormous extent of the railroad system of this country is considered, it seems very wonderful that it was created within the lifetime of a single individual, who was an active, and, it may be said, the chief participant in the very beginning of steam locomotion in this country. Less than a year ago the venerable Captain John Ericsson ended his eventful life. He was a participant in the celebrated Rainhill trial of locomotives on the Liverpool & Manchester Railway in 1829.

His life and that of Mr. Allen formed links which almost united the eighteenth and the twentieth centuries.

In September of 1829 Mr. Allen became the Chief Engineer of the South Carolina Railroad, the construction of which had then been determined upon. On his recommendation the gauge of the road was made 5 ft. This road was completed and its cost was within his original estimates, and when finished it was the longest railroad in the world. Later the question of the gauge of the Erie road was referred to him as Consulting Engineer of that line. He advised that it also be made 5 ft. It was a great misfortune that his advice was not followed in both cases, and that the gauge for all American railroads was not made 5 ft. The extra width of  $3\frac{1}{2}$  in. would now be an immense advantage in the construction of both cars and locomotives. As the weight, size and capacity of these have grown the value of this  $3\frac{1}{2}$  in. of space between the rails has increased in about the same ratio.

At that early date the South Carolina Railroad Company had to decide whether the motive power of the road should be horses or locomotives. In a report made to the Company in November, 1829, Mr. Allen presented an estimate of the cost of transportation by horse-power and by locomotive power. The estimate of cost of locomotive power was based on facts obtained on the Stockton & Darlington Railroad. In his pamphlet, "The Railroad Era," Mr. Allen said :

The result of that comparison was in favor of locomotive power, and the report contained a decided recommendation that locomotive power should be the power to be used on the South Carolina Railroad. But the basis of that official act was not the simple estimate resting on the facts as they existed on the Stockton & Darlington Railroad, but, as was stated in the report, was on the broad ground that in the future there was no reason to expect any material improvement in the breed of horses, while in my judgment the man was not living who knew what the breed of locomotives was to place at command.

This report was submitted to a full meeting of the Board, and the decision was unanimous to adopt locomotives as the tractive power on the road, and Mr. Allen

added, "it was the first action of this kind by any corporate body in the world."

The South Carolina Railroad when first constructed consisted of timber rails or stringers  $6 \times 12$  in., on which iron bars  $2\frac{1}{2} \times \frac{1}{2}$  in. were spiked. When the question of motive power came up for consideration it was essential that the weight per wheel should not be greater than the structure described could safely bear. The load per wheel, therefore, had to be limited, and it also seemed to be highly important to place as great a quantity of power within one machine as possible. In another communication made May 16, 1831, to the President and Directors of the road Mr. Allen discussed the general subject of steam transportation, and especially the subject of boiler capacity of locomotives, and then said :

When we come to consider the application of locomotives to wooden roads there are circumstances which call for attention, and a particular adaptation of arrangement to them. As the same amount of attendance and repairs attend engines of the various powers within the range that can be employed on railroads, it becomes a highly important object to place as great a quantity of power within one machine as possible. And this is more peculiarly the case on a road where the great and most difficult sources of expense are the attendance and repairs, while the fuel is comparatively of little consequence. As on every road there exists a limit of weight to be placed on each pair of wheels, and as on wooden roads this limit is much less than on an iron one, it becomes a still more interesting inquiry to ascertain by what means we may increase the quantity of power without exceeding the limit. On the Liverpool & Manchester road they appear practically to be limited to three tons on each pair of wheels, though some accounts state this to be too high, with their velocity, for the permanent benefit of the road. On a wooden road, where only  $\frac{1}{2}$ -in. iron is made use of, I would put the limit at  $1\frac{1}{2}$  tons per pair of wheels.

If, therefore, there can be no arrangements whereby this disadvantageous relation may be provided for, it is evident that to convey the same quantity of goods or transport the same number of passengers, we must incur twice the expense of attendance, twice the amount of repair, and twice the liability to accident. In fact, more than twice, since in doubling the weight of the engine we are able to appropriate a greater proportion of the increased weight to steam-generating purposes.

The arrangement which I would propose to effect so desirable an object would be, as the limit exists in the quantity on each point of support, to increase the number of supports, and thus distribute the weight over a greater surface. I would therefore place the engine on six or eight wheels, and limit the weight to  $1\frac{1}{2}$  tons to each pair.

There arise two objections to this arrangement, from the inequalities in the line of support; the one vertical, the other horizontal.

If three or four wheels were united on a side to the same rigid straight line, and the road had irregularities in its surface, there would arise great and injurious strains to the structure, from the wheels not being able to adapt themselves to the irregularities.

This difficulty may be completely obviated by giving the weight to be supported but two points of support on each side, and making these points the centers of motion of the pairs of wheels.

This arrangement will evidently adapt itself with as much ease and simplicity to all vertical irregularities, as is the case with two wagons connected together.

As to the change of direction horizontally, as in the entrance of turnouts and the passage of curves, a very simple adjustment will relieve the arrangement from all difficulty. If we connect the frame with the cross-piece only at the center, and by a horizontal point, the two sets of wheels will thereby be enabled to pass all curvatures with the facility of two simple wagons connected in the ordinary manner.

No attempt has yet been made to accommodate the locomotive carriage to the passage of curvatures, by providing the means of changing the parallelism of the axles, and giving them the relative inclination that the radius of curvature requires.

As a result of this communication the Company authorized the construction of several "steam carriages" on this plan. Mr. Allen accordingly left Charleston early in the summer of 1831 for the North, and contracted with the West Point Foundry for the construction of the engines. The first one built and put in operation was the *South Carolina*. She was received at Charleston in January, 1832, and was put in operation in February, 1832. Three others were also constructed and put in operation before the end of 1832.

On October 1, 1834, a patent was granted to Ross

Winans, of Baltimore, for eight-wheeled cars with two trucks. In his specification he described his invention as follows :

I construct two bearing carriages, each with four wheels, which are to sustain the body of the passenger or other car, by placing one of them at or near each end of it, in a way to be presently described. The two wheels on either side of these carriages are to be placed very near to each other ; the spaces between their flanches need be no greater than is necessary to prevent their contact with each other.

\* \* \* \* \*

The body of the passenger, or other car, I make of double the ordinary length of those which run on four wheels, and capable of carrying double their load.

This body I place so as to rest its whole weight upon two upper bolsters of the two before-mentioned bearing carriages or running gear.

The Newcastle & Frenchtown Turnpike & Railroad Company built or used cars containing Winans' improvements, but denied the validity of his patent. Hence, in 1838, Winans brought his first suit at law against that Company. This was the beginning of 20 years of litigation with the railroads of the country, a brief history of which was written by Mr. William Whiting, of Boston, counsel for some of the defendants, and published in 1860 with the title "Twenty Years' War against the Railroads." Of this litigation Mr. Whiting said :

It was at one time a question of millions, to be assured by a verdict of a jury—not indeed in a single suit, but as the result of enforcing the plaintiff's claim wherever railroads were in use and the courts of the United States had jurisdiction. A single verdict, sustained by the court, would enable that result to be easily reached. Stimulated by such hopes and fears, the litigation has been conducted with a corresponding perseverance, labor and talent. From Maine to Maryland, through a period of 18 years, in various courts of law and equity, against a great number of railroad companies and against other defendants, before juries of the country and juries of the city, before not less than six different judges of the courts of the United States, and with all the talent and learning that abundant means and a liberal hand could supply, with a pertinacity of purpose rarely equalled, the plaintiff has pressed his claims.

The case was finally carried to the Supreme Court in Washington and was heard in 1858, and a final decision was given in favor of the railroads and against Winans. In closing his account of this remarkable trial Mr. Whiting said :

Thus, after *twenty years* of controversy—the commencement of a large number of actions at law and in equity against the railroads, the actual trial of eight cases—the recovery, by Mr. Winans, of two verdicts sustaining his patent—the disagreement of the jury in three trials, the finding of one verdict at Canandaigua against him, the expenditure, on both sides, of not less than \$200,000, and the authoritative settlement of the suit at Washington in favor of the railroads, ends this remarkable chapter in the history of litigation.

In these trials the testimony of Mr. Allen, and the eight-wheeled engines which he built in 1831, became very important evidence, and in an opinion given by Judge Nelson he said : “ The decided preponderance of the evidence is, that this steam carriage embraces all the elements, arrangements, and organization to be found in the cars manufactured by the defendant.”

The invention or first use of the truck on locomotives has been a subject of dispute for a long time. This seems to be a proper occasion for summing up the evidence with reference thereto.

The use of a truck in connection with steam carriages is distinctly suggested in the English patent granted to William and Edward W. Chapman, dated December 30, 1812. In this it is said :

Fig. VIII. (not given here) shows a carriage of six wheels for the engine, which may rest equably, or nearly so, on each of its wheels, and move freely round the curves or past the angles of a railway. 1, 1, the fore pair of wheels, are, as usual on railways, fixed to the body of the carriage ; 2, 2, and 3, 3, the other two pair, are fixed (on axles parallel to each other) to a separate frame, over which the body of the carriage should be so poised, as that two-thirds of its weight should lie over the central point of the four wheels, where the pivot 4 is placed, and the remaining third over the axis 1, 1. The two-thirds weight of the carriage should rest on conical wheels or rollers, bearing upon the curved plates c, c, so as to admit the ledges of

the wheels, or those of the way, to guide them on its curves or past its angles, by forcing the transom or frame to turn on the pivot, and thus arrange the wheels to the course of the way, similarly to the carriage of a coal-wagon. And if the weight of the locomotive engine should require eight wheels, it is only requisite to substitute in place of the axis I, I, a transom, such as described (laying the weight equably upon both) and then similarly to two coal-wagons attached together, the whole four pair of wheels will arrange themselves to the curves of the railway.

There is no evidence to show that the Chapman plan was ever put into practice.

It was also brought out in the Winans litigation that in the early part of 1830, long timbers were carried on the Baltimore & Ohio Railroad on two four-wheeled cars, on which bolsters were placed, with a round pin passing down through a plate attached to the truck; string-pieces from 20 to 45 ft. long were then placed on the bolsters. Each of the two four-wheeled cars were thus enabled to adjust themselves to the vertical inequalities and horizontal curvature of the track. It was argued that this embodied substantially the principles of the double-truck car.

In the printed testimony in the Winans litigation Mr. Allen's and other concurring evidence is given at great length. Lithographed copies of the original plans and drawings of the double-truck engines designed by Mr. Allen, for the South Carolina Railroad, are appended to the volume of printed "Evidence for Respondents" in this case, and the engravings given herewith (figs. 2-7) are accurate copies made on a smaller scale from these lithographs. He testified that the plans for the eight-wheeled engines were drawn by C. E. Detmold, his assistant, in the close of 1830 or the early part of 1831.

Mr. Detmold testified as follows :

Before the drawings were commenced the principles of the eight-wheel double-trucks were fully developed and explained to me by Mr. Allen, so that I then clearly understood the subject of the construction and operation of the eight-wheel double-truck railroad cars, as well as I now do. The adoption of the eight-wheel engines became necessary from the fact that the Charleston Railroad was constructed of wooden rails with a light flat iron bar, the rails being supported on sleepers resting

upon piles, at a distance of  $6\frac{1}{2}$  ft. apart. The four-wheel engines acted very injuriously upon this light structure, because the greater part of the weight of the locomotive was at one end, and therefore the slightest irregularity in the road caused the engine to operate like a heavy hammer upon the rails, which injured both rails and engine, and produced a very unsteady and unsafe motion. The object of Mr. Allen was to make such improvements in the running gear as to obviate these difficulties. This was done by placing two swiveling trucks under the long body of the engine. The body was very much longer than that of the ordinary four-wheel engine.

\* \* \* \* \*

The object was to obtain a small amount of pressure on each wheel, while the body carried was increased in length and weight, and to give the two trucks a proper action to conform to the curves and other inequalities of the road, and, at the same time, to cause the body of the steam carriage to run more smoothly or steadily on the road than the four-wheel steam carriages previously in use; and also to transport more freight and passengers, and run with more ease, safety, and economy, both as to the train and to the road.

Mr. Horatio Allen, in the winter of 1830 and 1831, made some of the drawings himself, and the drawing marked *G* (fig. 5), and signed by me, is one of the drawings showing parts of the steam carriage.

Mr. Detmold testified further that :

" During the winter of 1830 and 1831, under the direction of Mr. Allen, I made and assisted Mr. Allen in making drawings of the double truck steam carriages. A portion of the original drawings is now before me . . . and a copy thereof, which I believe to be correct, is annexed to the deposition of Horatio Allen, in the present case."\* He emphasized his evidence to another interrogatory by answering : " I am absolutely certain as to the date at which I assisted in making said drawings."

As already related the first of the engines was built from these drawings in 1831, and was put in operation in January, 1832.

The same volume of testimony from which such liberal quotations have already been made contains that of the late

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\* The engravings, figs. 2-7, have been made from copies of these drawings.

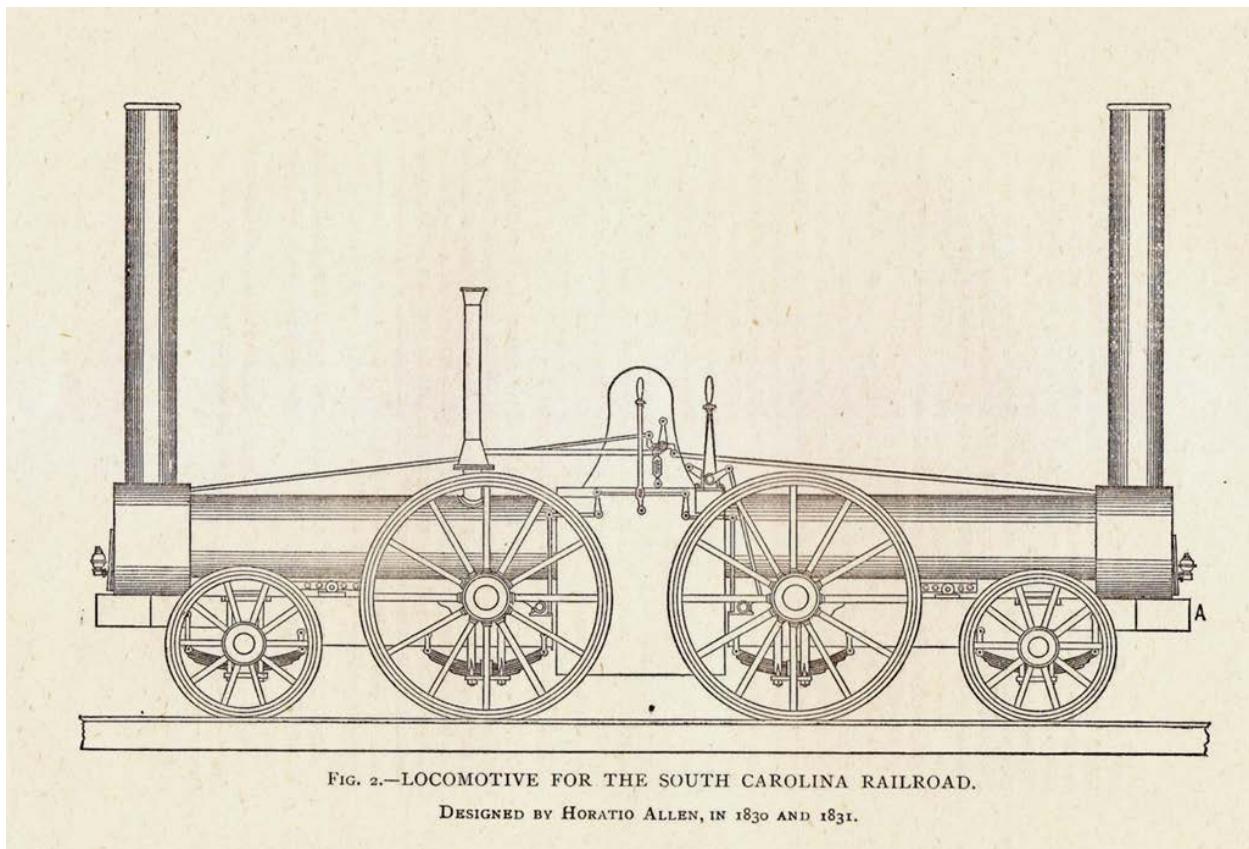


FIG. 2.—LOCOMOTIVE FOR THE SOUTH CAROLINA RAILROAD.

DESIGNED BY HORATIO ALLEN, IN 1830 AND 1831.

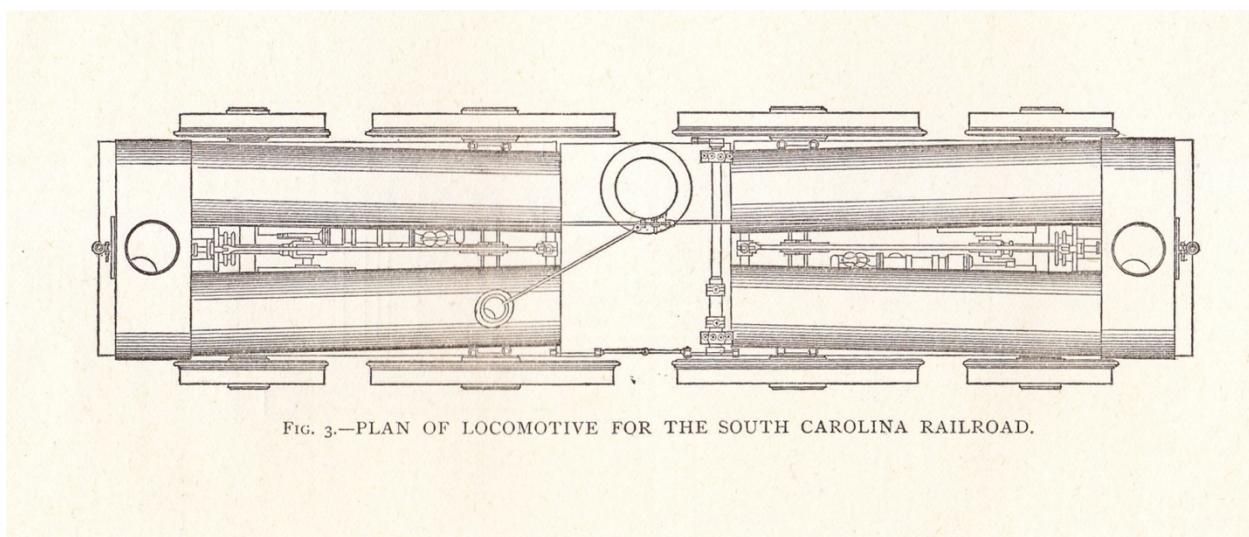


FIG. 3.—PLAN OF LOCOMOTIVE FOR THE SOUTH CAROLINA RAILROAD.

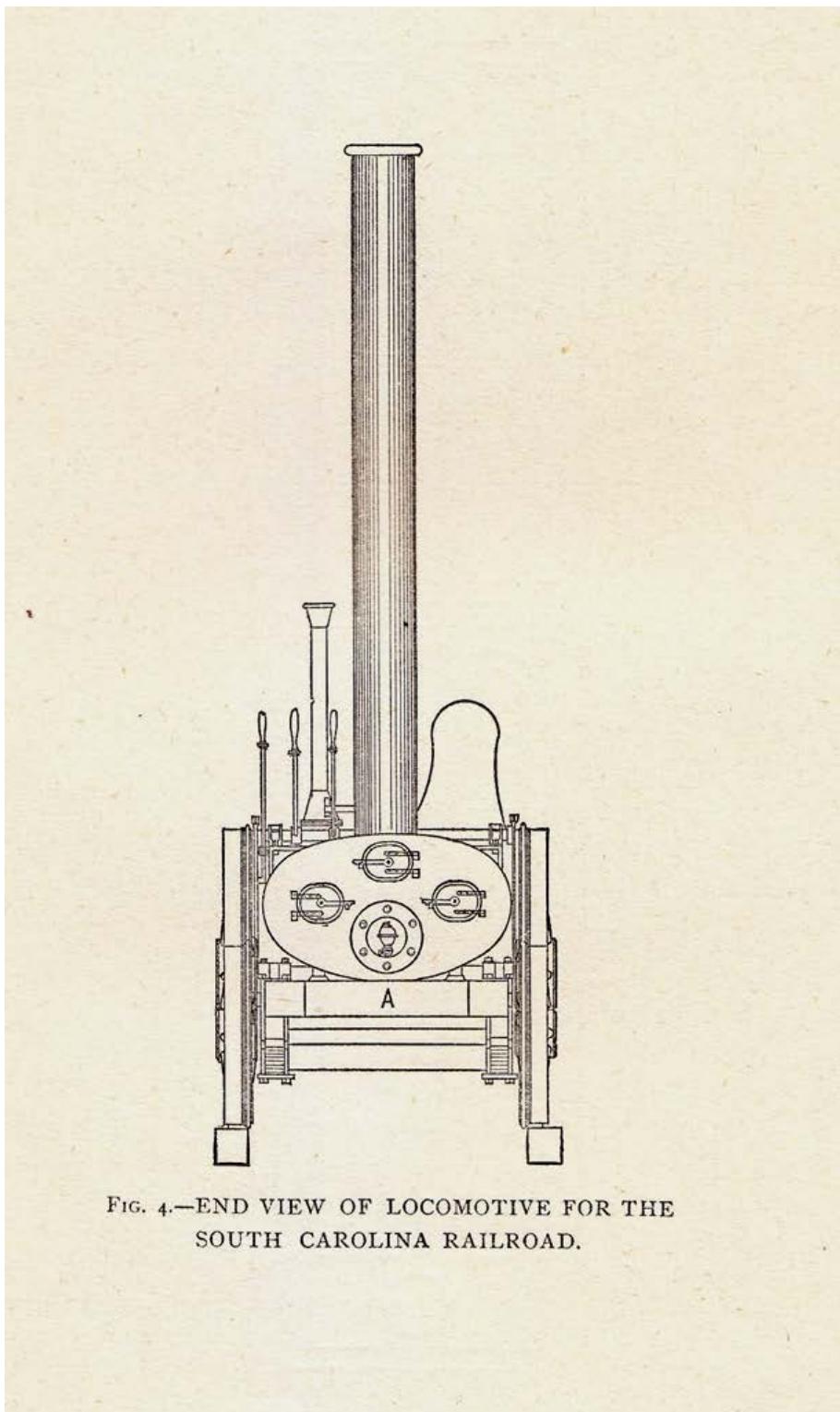


FIG. 4.—END VIEW OF LOCOMOTIVE FOR THE  
SOUTH CAROLINA RAILROAD.

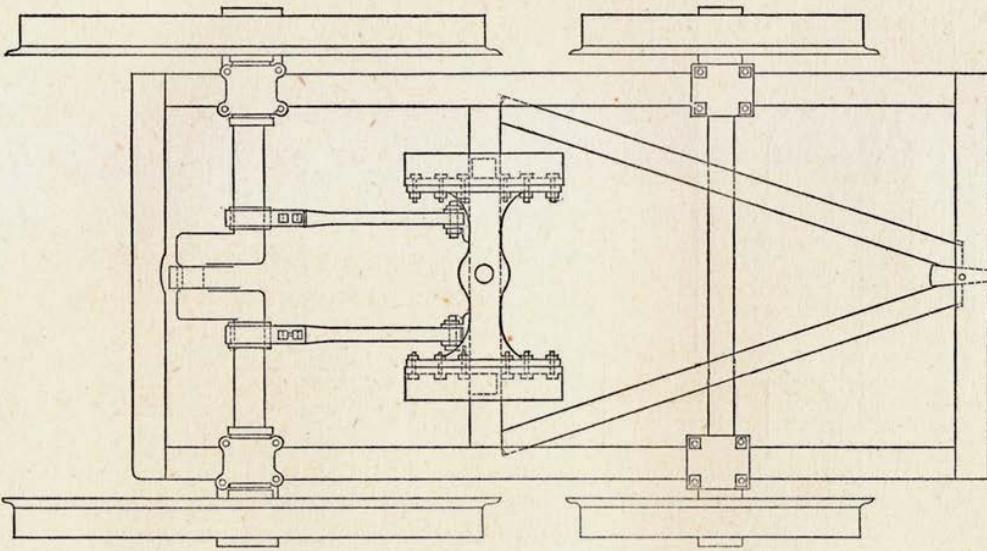


FIG. 5.—PLAN OF TRUCK OF LOCOMOTIVE FOR THE SOUTH CAROLINA RAILROAD.

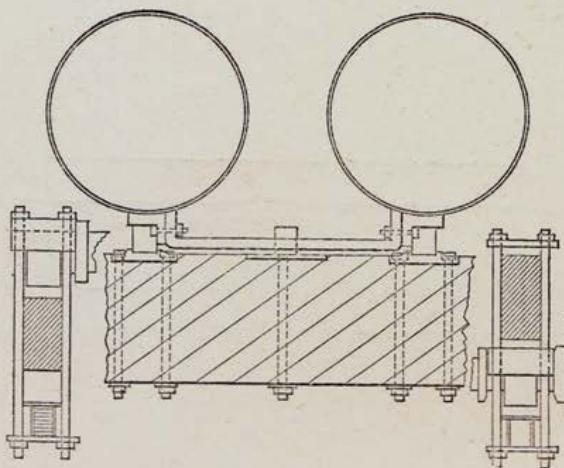


FIG. 6.—TRANSVERSE SECTION OF LOCOMOTIVE  
FOR THE SOUTH CAROLINA RAILROAD.

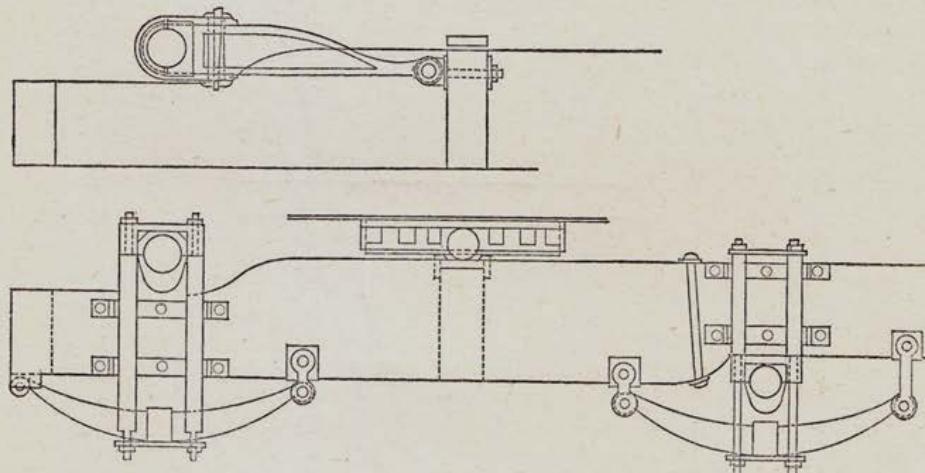


FIG. 7.—FRAME AND SPRINGS FOR LOCOMOTIVE FOR THE SOUTH CAROLINA RAILROAD.

John B. Jervis, who claimed to have invented the locomotive truck, in which he says :

My attention has been particularly directed to the subject of the arrangement of the wheels of locomotives and cars to facilitate the running of locomotives and cars on curves ; my attention was very early directed to that subject. It was a subject on which I had often thought a good deal, but made no experiments *until 1831*. In 1831 and early in 1832 I was very much engaged in devising some means by which four wheels could be substituted for two as the leading wheels of the locomotive, and finally prepared a plan by which the forward end of a locomotive was supported by a sort of independent carriage consisting of four wheels. Those wheels were placed near to each other and working under the main frame of the engine, which rested mainly on the outside timber on friction rollers, supported in its lateral position on the frame of the independent carriage by a center pin, and this independent carriage being a substitute for the two wheels formerly used. . . . A locomotive was made on that plan under my direction by the West Point Foundry Association in 1832. I think it was called the *Experiment*. The locomotive was put on the Mohawk & Hudson Railroad in the autumn of 1832.

In another deposition Mr. Jervis said :

I invented a new plan of frame, with a bearing carriage, for a locomotive engine, *in the latter part of the year 1831*, for the use of the Mohawk & Hudson Railroad, which was constructed and put on the road in the season of 1832.

\* \* \* \* \*

The engine had six wheels ; on one pair, the driving-wheels, rested in the usual way, one end of the frame of the engine ; the other end of the engine rested on the frame of a four-wheel car or truck, so arranged that by means of a center pin passing through a transom beam, the upper frame on which the engine rested could follow the guide of the lower frame, without necessarily being parallel with it. Friction rollers were placed on the lower or truck-frame, to support the engine-frame, and allow the truck-frame to move freely under it. By this means a long frame for an engine could be and is supported near its end, which provides for the most steady motion of the machine, and by the separate truck to guide, it passes on curves with all the facility of a short geared car.

From the evidence quoted it will be seen that the draw-

ings for Mr. Allen's double-truck engine were made during the latter part of 1830 and the beginning of 1831. In his report to the President and Directors of the South Carolina Railroad Company, dated May 16, 1831, he says: "I would therefore place the engine on *six* or eight wheels." As his report contemplated and advised the use of the truck, and as a two-wheeled truck was not known at that time, obviously what must have been intended was the arrangement of a four-wheeled truck at one end of the engine, and a pair of driving wheels attached to the main frame at the other.

In testifying in the Winans case the following questions were asked and the answers were given by Mr. Allen:

*Q.* You say that you became satisfied that it would be necessary to place the steam carriages on six or eight wheels, and that you devised the means of adapting the carriage for six or eight wheels; will you state what adaptation was made for six wheels?

*A.* By using one truck with four-wheels, as already described in the eight-wheel arrangement, and connecting the other pair of wheels and their axle with the main frame of the locomotive.

*Q.* Did you construct a locomotive, or more than one, to be used on said road, with six wheels?

*A.* I altered one four-wheel English engine to a six-wheel arrangement.

*Q.* When?

*A.* I don't know.

*Q.* Try and recollect the year.

*A.* I can't recollect; I can make an inference about the time it must have been.

*Q.* How long was the six-wheel engine used, as near as you can recollect?

*A.* My recollection is, that it was in use until I left the road; I have no definite knowledge about it.

This testimony was given in 1853.

It is thus clear that Mr. Allen matured his plans for a double-truck engine in the latter part of 1830, and suggested a single-truck engine in his report of May 16, 1831. Mr. Jervis testified that he invented "a new plan of frame with a bearing carriage" in the latter part of 1831. Mr. Allen's first double-truck engine was put in operation in

February, 1832. Mr. Jervis's single-truck engine was put in use early in September, 1832.

Mr. Jervis before his death wrote a letter in which he claimed that the plan of applying a truck to a locomotive which he introduced is the one which has since been universally used, whereas that which was devised by Mr. Allen, and adopted in the construction of the engines for the South Carolina Railroad was impracticable, and until the plan was revived by Mr. Fairlie it had fallen into entire disuse. While this is true, nevertheless the records show that, so far as priority of use is concerned, that to Mr. Allen belongs the credit of having first applied the truck to locomotives, and of having suggested its use as it was afterward applied by Mr. Jervis. Whether the alterations to the English locomotive, which Mr. Allen testified under oath he had changed to a six-wheeled engine, with a truck, were made before or after Mr. Jervis had the *Experiment* built, will now probably never be known.

In this connection it may be well to examine another bit of testimony bearing upon this question of the invention of the truck. In a paper by Mr. Vernon Smith, on "The Development of the Locomotive," read before the Canadian Society of Civil Engineers, in 1889, he says :

As the invention of the truck is claimed almost universally for America, and as it has subsequently become a prominent feature in American locomotives, it may be well to place on record a few facts that at least go to prove that the Newcastle shops had something to do with the invention.

Then, in referring to the old drawings in Stephenson's office in Newcastle, the Author says :

The next number, still 1831, is No. 42, ordered by the Saratoga & Schenectady Railway, an engine with 9 in. X 14 in. cylinders, one pair of 4 ft. 5 in. driving-wheels, and a truck with 4 wheels 2 ft. 8 in. diameter.

The third edition of Wood's "Treatise on Railroads," published in 1838, contains a tabular statement of the Dimensions of Locomotive Engines manufactured by R. Stephenson & Company. In this No. 42, for the Saratoga & Schenectady Railroad, is given, but it is distinctly said that it had two driving and *two supporting wheels*. As

the two-wheeled truck was unknown at that time, obviously either Mr. Wood, who wrote in 1838, or Mr. Vernon, whose paper is dated last year, is wrong.

In giving his evidence Mr. Allen described the engines for the South Carolina Railroad as follows :

I gave each four wheels, at either end of the engine, an independent frame or truck. I connected the center of that frame or truck with the boiler of the locomotive by a center pin, and I supported each end of the boiler by rollers, resting on the sides of the truck about midway between the pair of wheels commonly called side-bearings. This arrangement allowed each truck or frame to move horizontally around the pin and allowed each frame to move vertically around the point at which the boiler rested upon that frame or truck.

Four of the wheels were 5 ft. high, and four, I think, were 3 ft. ; the cylinders of the engine were attached to the boilers. The frames or trucks were covered by the boilers ; by frame I mean the truck ; there was no independent frame ; the boilers constituted the frame. The draw-bar was connected to the truck. The connecting-rod was attached to the crank on main axle, with ball-joints, to allow the trucks to swivel and conform to the curves of the road.

It will be seen from the engravings that the fire-box of the engine illustrated was in the middle of the boiler, and that it had two barrels at each end which extended each way from the fire-box. The tubes, unfortunately, are not shown in the cross-section, fig. 6. That they were multi-tubular boilers is known by the fact that Mr. Allen informed the writer that the steam-blast was not used on the engines, and that consequently the lamp-black from the resinous pine-wood which was used for fuel filled up the tubes. The fact that the steam-blast was not used also accounts for the high chimney shown in the engravings. The difference in the height indicated in figs. 2 and 4 is due probably to the arrangement of the original drawings on the sheet of paper, which did not leave room enough for the upper part of the chimneys of fig. 2.

There was one cylinder only to each truck. The cylinders were attached to the smoke-box and not to the truck frame. This made the ball-joint (which is not shown in the drawings) necessary to enable the truck to swivel in

relation to the boiler and cylinders. If each crank happened to stop on a dead-center the engines were hard to start, and it was said that a judicious use of a fence-rail to start the engines was sometimes required when this occurred.

In giving his testimony, Mr. Detmold said, of the working of these engines :

So far as the running gear was concerned, they all answered admirably the purposes for which they were built, and had the advantages over the former four-wheel engines, of distributing the weight of the locomotive over a larger surface of rails, and over more points of support, and by the double swiveling-trucks, that of conforming to all the irregularities and curvatures of the roads, and of far greater evenness and steadiness of motion, when running at high speed, and saving injury to the rails and engines by avoiding the hammering I have mentioned. After they had been running some years the difficulty of making sufficient steam became such, that the engines were superseded, but not owing to any defect in the running gear.

The drawings of these engines were obviously imperfect in many respects, but they are all that is left as a record of the construction of these remarkable machines. They show how, at that early date, Mr. Allen anticipated what have since been recognized as essential principles in the construction of locomotives and the operation of railroads. These principles are, 1st vertical, and 2d lateral flexibility of wheel-base, and 3d the distribution of weight of the locomotive on more points and over a greater surface of the road than was possible with the engines in use previous to 1830. These results, it will be observed, are a consequence of the adoption of the swiveling-truck in locomotive construction, which was devised by Mr. Allen in 1830, and which he constructed in 1831 and put in practice in 1832.

Furthermore, as Judge Nelson remarked in giving an opinion in the Winans case, these engines "embraced all the elements, arrangements and organization to be found in cars with two four-wheeled trucks." It was the early adoption of swiveling-trucks for both locomotives and cars in this country which has so materially "differentiated" American railroad practice from that in other countries, and to Mr. Allen belongs the credit of having had the prescience to see, and the courage to put in practice,

what are now recognized as essential principles in railroad construction. With the light and experience of 60 years to guide us, it is now easy to see how very close these early engines of Mr. Allen came to being a most brilliant success. If the driving-axles had been attached to frames fastened to the fire-box, and if the two pairs of small wheels alone had been connected to the truck-frames, and the cranks had then been placed at right angles to each other, and the driving-wheels coupled together, the engines would have achieved immortality.

In 1834, after the South Carolina Railroad was finished, Mr. Allen married Miss Mary Moncrief Simons, daughter of the Rev. James Dewar Simons, Rector of St. Philip's Church in Charleston. He remained in Charleston until 1835, and in the spring of that year he went abroad, accompanied by Mrs. Allen and her mother, and devoted nearly three years to foreign travel, returning to America near the close of 1837. After a summer in England and Scotland and a winter in Paris, he visited the principal cities of the continent, and made the entire passage of the Danube to the Black Sea and Constantinople, went thence to Smyrna, the Asiatic Coast, to Athens, and across the Levant to Alexandria, and spent the winter on the Nile. In the spring of 1837, he went to Naples and Rome, and returned to Paris, and from there to England, from which he sailed for New York late in 1837.

In 1838 he received the appointment of Principal Assistant Engineer of the Croton Aqueduct, John B. Jervis being the Chief Engineer. Before the High Bridge over the Harlem River was built, Mr. Allen recommended that the Croton Aqueduct be carried in a tunnel below the river. Since then this plan has been adopted for the new aqueduct, which now passes under the river. On the completion of the Croton Aqueduct, in 1842, he first turned the water on to supply the city of New York. Afterward he was appointed one of five commissioners who were intrusted with the supervision of the distribution of the water through the city.

About 1842 Mr. Allen became one of the proprietors of the celebrated Novelty Works in New York. This establishment originated in a somewhat curious way. Previous

to the date when this firm was organized Dr. Nott, then President of Union College, invented a stove and a steam boiler for burning anthracite coal. To show the entire practicability of his invention he had a small steamboat built called the *Novelty*, which ran from New York to Harlem. At night this boat was laid up at a landing at the foot of Twelfth Street. A small shed was then erected there, with a few tools for doing repairs on the boat. This shop was extended, and it came to be known as "The Novelty's Works," and afterward passed into the hands of Mr. Stillman, who extended it and did various kinds of machine work there. After Mr. Allen entered the firm the business, grew very rapidly in various directions, and included mill-work of various kinds, stationary and marine engines, pumps, sugar machinery, steam fire-engines, hydraulic presses, etc.

The firm of Stillman, Allen & Company was formed in 1847, and consisted of Thomas B. Stillman, Horatio Allen, Robert M. Stratton, George F. Allen, and William B. Brown. The Novelty Works finally became the largest establishment in the country for building marine engines. The machinery for many of the old Collins Line of steamers and the Pacific Mail Steamship Company, was built there, including the engines of such ships as the *Pacific*, *Atlantic*, *Adriatic*, *Arctic*, and *Baltic*. All these had side-lever engines excepting the *Adriatic*, which had oscillating engines, with two cylinders 9 or 10 ft. diameter and 13 ft. stroke.

Mr. Allen was always a great advocate of oscillating cylinder engines for side-wheel steamships, and in 1867 he wrote what he called "a statement of facts and considerations in reference to beam and oscillating engines for marine side-wheel steamships," which was addressed to Allan McLane, President of the Pacific Mail Steamship Company, and was afterward published in a pamphlet. In this Mr. Allen compared engines with 85-in. cylinders and 8 ft. stroke, and claimed that the room occupied by the oscillating engine compared with the beam engine is 8,500 cubic feet for the one and 14,750 for the other; the weight 138 and 152 tons respectively; the number of parts through which the power is transmitted from the piston to

the crank is three for the oscillating engine and nine for the beam engine ; the number of parts which must be constructed in true line and relation to each other is three for the oscillating and six for the beam engine ; the number of bearings and their brasses to be kept in proper adjustment and lubrication is five for the oscillating and 13 for the beam engine. He also explained that the structure through which the power was transmitted from the cylinder to the crank-pin would be much stronger and more substantial, and the strain on the bottom of the vessel less with the oscillating than with the beam engine ; the weight, which comes to a state of rest in passing the centers is  $6\frac{1}{2}$  tons in the one engine and 30 in the other ; the valve-gear of the oscillating engine, it was admitted, has more parts than that of the beam engine. It was also claimed that all the journals of the oscillator are as accessible as those of the beam engine, that the first could be balanced by cast-iron buckets on the wheel as perfectly as the latter is by the weights at each end of the beam.

The *Adriatic* had oscillating engines, and Mr. Allen applied his two-motion cone valve-gear to them, which consisted of large conical plug-valves. They were moved by a mechanism which first lifted the valves and then turned them, which it was supposed would prevent them from jamming. There was considerable difficulty in getting them to work satisfactorily, which caused much delay and expense. Some part of the gear broke down on a trial trip, and the valves were finally taken out and others were substituted for them. As there was great rivalry at that time between the Cunard Line—which was owned by Englishmen—and the Collins steamers, which were owned by Americans, this experimental valve-gear attracted a great deal of attention, and was the subject of much criticism.

The engines for the *Constitution*, *Moses Taylor*, *Ancon*, *Mariposa*, *Great Republic*, *Idaho*, *Montana*, *Arizona*, *Golden Age*, and *Golden Gate* for the Pacific Mail Steamship Company and for the *Re d'Italia* and *Re Gallant-Uomo*, two war ships for the Italian government, were all built at the Novelty Works. The *Golden Gate* also had oscillating engines.

During the War engines were built for three gun-boats

and also for the sloops *Adirondack* and *Wampanoag*, and the double-turreted monitor *Miantonomah*, and the frigate *Roanoke* was converted into a monitor with two turrets. The old engines were used in the vessel when it was altered.

At one time there were over 1,500 men employed in the Novelty Works, but so great was the difficulty of getting men at that time, owing to the demands of the army and navy, that Mr. Allen went to Europe and employed a large number there who were brought over.

It was during the War that the somewhat acrimonious dispute, with reference to the economy of using steam expansively arose. On the one side were those, including Mr. Isherwood, the Chief of the Bureau of Steam Engineering, who advocated the use of moderate degrees of expansion and comparatively low pressure with the engines then in use; and on the other side was the late Mr. E. N. Dickerson and others, who claimed that greater pressures and excessively high degrees of expansion were the most economical. The subject was discussed on both sides with great fierceness and attracted the attention of Congress, and finally the Naval Committee requested the Naval Department to have a series of experiments made "to assist in determining the limitation of the economical expansion of steam under practical conditions, and other collateral questions relating to the general subject." \*

In 1863, Mr. Welles, then the Secretary of the Navy, appointed Mr. Allen and Mr. Isherwood, who at that time was the Chief of the Bureau of Steam Engineering, "a Commission to devise and conduct a set of experiments to ascertain, by means of practical results, the relative economy of using steam with different measures of expansion." † The Commission was also authorized "to associate such other persons as it may deem advisable for the object in view."

The experiments were to be made under the supervision

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\* Paper on the Cost of Power in Non-Condensing Steam Engines. Read by Charles E. Emery before the American Society of Mechanical Engineers, 1888.

† The above language is quoted from the original appointment of the Commission.

of a Committee of the Franklin Institute of Philadelphia, and the Smithsonian Institute of Washington, and three civilian engineers, of whom Mr. Allen, who believed in high rate of expansion, was one. If Committees were appointed by the Institutions named, they did not take an active part in conducting the experiments. These were made during the years 1864 to 1868 at the Novelty Works, under the general direction of Mr. Allen, who was then the President of the Company, and Chief Engineer Isherwood, at that time the Chief of the Bureau of Steam Engineering, U. S. N., who detailed a corps of assistants to do the work.

The experiments were commenced at the Novelty Works on a large scale. Engines with various-sized cylinders were constructed. These were connected with a large air fan, the revolutions of which represented the work done. Much time and money was consumed in getting this machinery to work satisfactorily, and in making the experiments, and apparently they did not prove exactly what either side anticipated. While they were insufficient to settle all the points at issue they showed what is well known now, that the point of cut-off which is most economical becomes shorter as the pressure is increased, but that with any pressure, the most economical degree of expansion is soon reached and the cost rises rapidly after this point is passed.

So much time was consumed in making the experiments that some of those who formed the Commission lost interest and practically abandoned them, possibly because the results did not prove what it was expected they would. The work was then carried on by Chief Engineer Isherwood and his assistants in consultation with Mr. Allen. The cost of the experiments went up to over \$100,000, and as the time consumed was so great and the results were apparently inconclusive, the Navy Department finally ordered them discontinued. The Commission in charge of them never made a report nor were the results published under Government authority, although a general table was furnished by Mr. Isherwood to Mr. R. H. Buel, who had it published in the articles on Steam Engineering which

he prepared for Appleton's Cyclopædia of Mechanics and in the American edition of Wiesbach's Mechanics.

It is not easy now to learn what was the precise significance, or rather what was proved by these experiments. Apparently they did not show as great an economy from the use of high-pressure steam and high rates of expansion as the advocates of that side of the question expected, though the results with high-pressure steam showed greater economy than those with low pressure, and it was also found that it was economical to cut off shorter with high than with low-pressure steam. The experiments were, of course, made with engines of the kind then in most general use, and did not include compound or triple-expansion engines with the very high pressures which have been made practicable by their use. It is evident now that those who then advocated the use of high-pressure steam and excessively high degrees of expansion, did not understand fully how steam used under these conditions is affected by various circumstances, especially those existing when steam is expanded in a single-cylinder engine.

Afterward, a competitive trial was made by Commodore Isherwood and Mr. Dickerson with two United States vessels, the *Winooski* and the *Algonquin*. They were first tied up in a dock and their wheels were turned at a regular rate and a careful record was kept of the fuel consumed. In these trials the *Winooski*, Commodore Isherwood's vessel, had an engine with double poppet-valves and Stevens cut-off. The *Algonquin* had a Sickles cut-off with single poppet-valves.

Trials of speed were afterward made at sea. The *Winooski* then used steam of 25 lbs. pressure cut-off at  $\frac{6}{10}$  of the stroke, and the *Algonquin* carried 90 lbs. of steam and cut-off at  $\frac{1}{10}$ .

The failure of the *Algonquin* in these trials is now a matter of history.

After the experiments at the Novelty Works were ended, Mr. Charles E. Emery, who was an assistant engineer in making them, suggested a supplementary series with a small engine having 8  $\times$  8 in. cylinders. The officers of the Novelty Works agreed to bear the expense of these which amounted to about \$5,000. The results of these ex-

periments with non-condensing engines were afterward published by Mr. Emery in the proceedings of the American Society of Mechanical Engineers in 1886 and 1888.

While the investigations were being made, it is said that Mr. Allen suspended judgment thereon, as was proper he should. Those who were intimately associated with him at the time never heard him express an opinion with reference to the subject after the experiments were ended.

In the light of our present knowledge it seems singular that experiments on such a scale were needed to show what now seems so easily proved. Doubtless some of the experiments of the present day will appear equally needless 25 or 30 years hence.

During all of Mr. Allen's career he was a prolific inventor, as will appear from the following list of some of the patents which he took out :

Steam Cut-Off	H. Allen.....	1841
Stop Cock	" .....	1841
Steam Cut-Off	" .....	1842
Determining Thickness of Metal Pipes.	H. Allen.....	1843
Tapping Mains.	H. Allen.....	1843
Steam Cut-Off	" .....	1847
Steam Cut-Off	" .....	1849
" " "	" .....	1849
Steam Engine Valve-Gear,	Allen & Wells.....	1853
" " " "	" .....	1853
Two Motion Cone Valve.....	.....	1855
Steam Engine Valve-Gear,	H. Allen.....	1857
Steam Boiler Tube Joint,	" .....	1858
Car Seats and Couches,	" .....	1866
Connecting the Tubes with the Heads of Surface Condensers.		
H. Allen..	.....	1868
Sleeping Cars, H. Allen.....	.....	1876
Terrestrial Globes, "	.....	1879

The Allen & Wells cut-off, in its several different forms, was introduced to some extent, and is still in use on different steamboats. The method of connecting condenser tubes to their heads, with compressed wooden ferules, has also been extensively adopted.

During the War, although a great deal of work had been

done at the Novelty Works, the success of the Company was not proportionate to the amount of the business. They were operated during part of that period under the disadvantage of a market in which the prices of labor and materials were constantly rising. Contracts were taken at fixed sums, and it was then not easy to anticipate what the increase would be in the cost of doing work before it was finished.

When the War was ended there was, of course, a cessation of Government work. Business at the Novelty Works had been conducted on a large scale, with fixed expenses in the same proportion. The tools and machinery were old and out of date, and it was soon found that the Works were being conducted at a loss. To remodel and re-equip them with new tools and machinery to meet the changed condition of business, would involve a large outlay of capital. The real estate was very valuable, and it was finally determined to close the Works and wind up the business. This was done in 1870 and the Novelty Works soon ceased to exist. The business which was conducted there, like most great enterprises, was attended with varying success. Under the firm of Stillman, Allen & Company it was at first very profitable, but some heavy losses embarrassed the firm and they had to seek outside aid. Mr. James Brown furnished the firm with more capital, and when a stock company was organized he became a stockholder, and Mr. Allen was President. During the War the business was very active and during part of the time profitable, but Mr. Allen was then not a large holder of the stock.

During his connection with the Novelty Works he also acted in the capacity of Consulting Engineer for the Erie Railroad, and he was President and Chief Engineer of that Company for a year. He was also Consulting Engineer to the Panama Railroad Company for a short time, and during that period also held incidentally other important engineering trusts. His professional career may be said to have ended as Consulting Engineer of the Brooklyn Bridge.

In 1870 Mr. Allen retired from active life and built himself a house at Montrose, near Mountain Station, on the Morris & Essex Railroad in New Jersey, where he re-

sided up to the end of his life. He left a widow, three daughters, and a son. He always seemed to derive his chief enjoyment in life from his delightful home, but this was especially the case during the latter years of his life. He was a man of very quiet domestic tastes, but took a lively interest in engineering, scientific, and especially educational matters, up to the last.

He always took an active interest in philanthropic and charitable matters, and was one of the founders of the Union League Club, and an active member of it in the days when its influence was exerted in behalf of great national questions, and before narrow partisanship had contracted its sphere of usefulness. He was also one of the organizers, and for a long time an active member, of the Association for the Improvement of the Condition of the Poor, the Children's Aid Society, and the New York Gallery of Art, and was associated with a number of gentlemen who were instrumental in preserving what was known as the Abbott Collection of Egyptian antiquities, which now forms a part of the New York Historical Society's collection. He was a member of the American Society of Civil Engineers, and was its President for one term. He was also a member of the American Society of Mechanical Engineers, and was elected an honorary member of both societies.

Mr. Allen took an interest in a very wide range of subjects. During his later years he devoted much time to the subject of education. He earnestly desired to be of use to the rising generation, and he sympathized very strongly with the difficulties of children and young people in acquiring knowledge. He wrote a little book on arithmetic and commenced one on algebra, and was especially interested in the methods of teaching astronomy. He also wrote a book on that subject and invented and constructed a number of instruments to facilitate the study of astronomy in schools.

His life and experience, if it could be fully written, would be of exceeding interest.

In his later years he often expressed regret that he did not keep a record of the events of his early life, and especially his observations during the period that he first visited Europe. He was then on intimate terms with George

Stephenson and the early fathers of the railroad system. He was in England to study that system, which was then, if not in its infancy, at any rate in its early youth. If his observations had been fully recorded, they would now be of intense interest. Beginning his study of engineering in early manhood, when railroads were an experiment, it extended over the period, so recently ended, which covered completely that wonderful era of modern development which has been due to the introduction, application, and diffusion of steam-power over the whole civilized world.

Mr. Allen was an ardent lover of nature, and nearly always devoted the early morning hours to the enjoyment of its beauty, and took the keenest delight in its contemplation. Among the marked traits of his character were his gentleness and generosity, which, it is said, "is in nothing more seen than in a candid estimation of other men's virtues and good qualities." He was always ready to give a helping hand to those who were down and trying to get up. His words and acts of encouragement to many young men beginning the hazardous voyage of life, were like propitious breezes and inspired them with hope which sustained them until they reached port. A paper published near his home said of him : " His integrity was of the most unswerving, unflinching kind, and he was scrupulous almost to a fault over matters that ordinarily pass current in the mercantile world." The modern forms which business bribery has assumed excited in him unbounded indignation. A gentleman occupying a prominent position in public life, and who was associated with Mr. Allen during the trying period of the War, said of him, he possessed all the best qualities of a true gentleman.

His last years were spent quietly with his family in his home at Montrose, in New Jersey. It may be said of him that his integrity commanded the respect of all honest men who knew him ; his generosity made many persons his debtors, and the delight which he took in contributing to the happiness of others led all to be " kindly affectioned" to him.



## Additions for Volume XX:

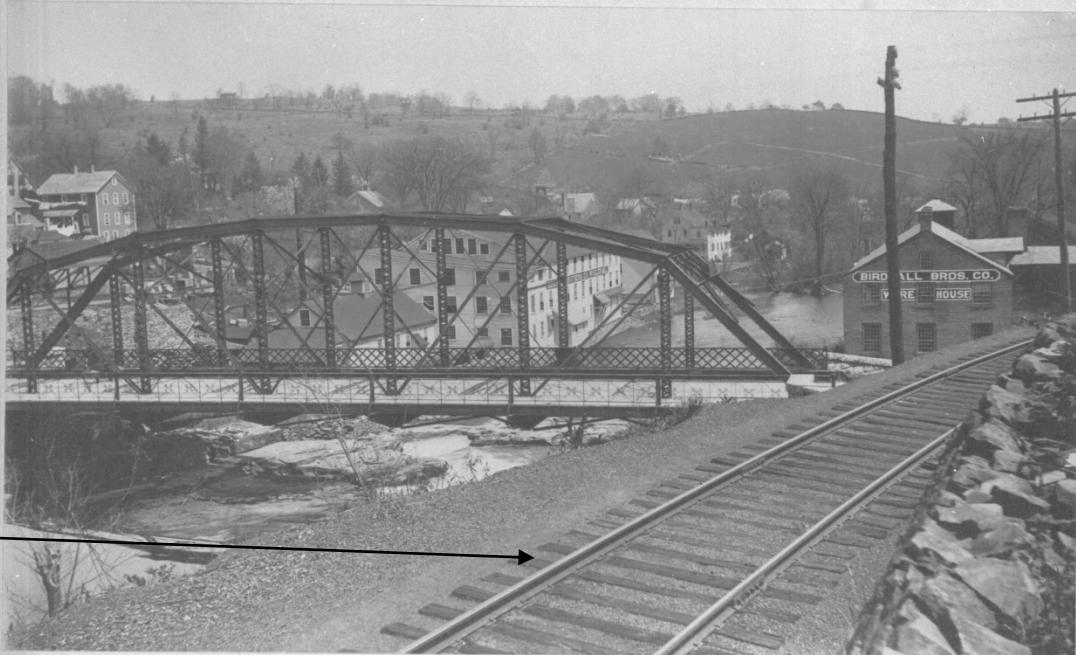
1. In the collection of black and white negatives that belonged to Dr. Edward Steers, now in the collection of Sal Mecca of Dunmore, PA, there are two photographs of Honesdale Branch of the D&H in Seelyville. Here are those two photographs:



*Coal Cars in Seelyville en Route to Honesdale*

In this view of Seelyville, we see a very large train of loaded coal cars (30-ton hoppers) en route to Honesdale. Two brakemen can be seen on cars in this train. At the end of the train is a center cupola caboose.

Honesdale  
Branch of  
the D&H

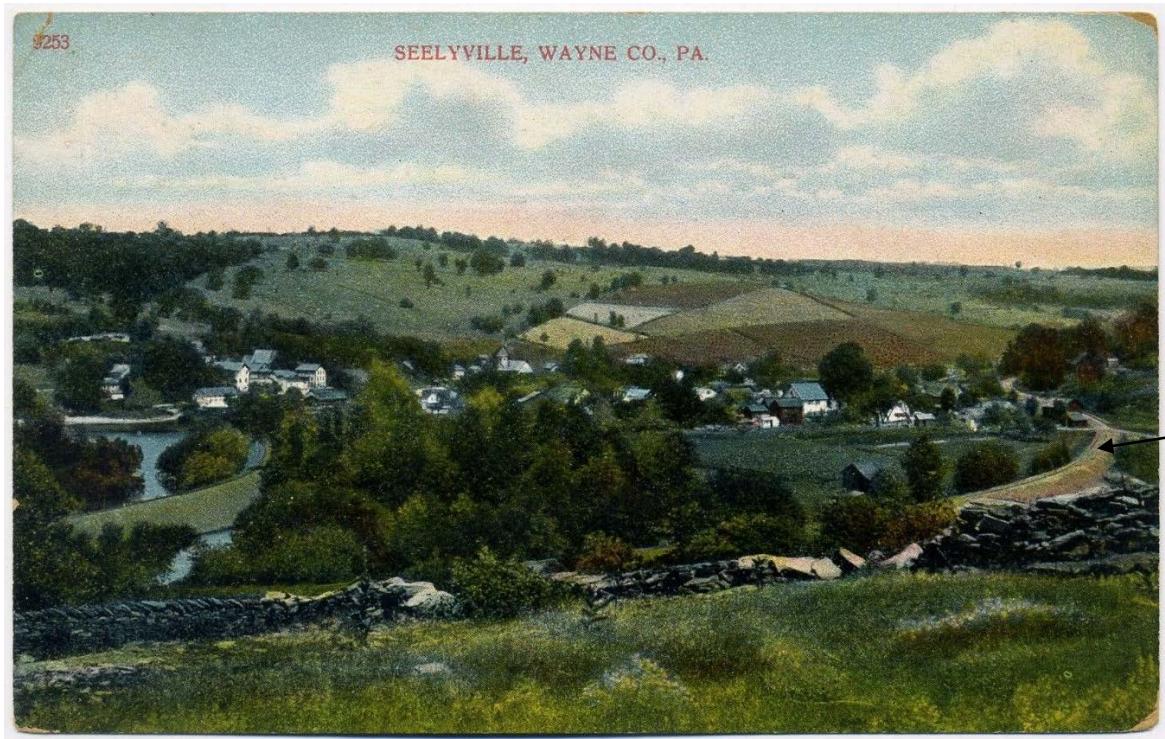


*New Bridge at Seelyville replacing  
bridge swept out by flood of 1903*

*New Bridge at Seelyville Replacing Bridge Swept Out by Flood of 1903*

2. Two posts cards showing the Honesdale Branch of the D. & H. at Seelyville, PA:

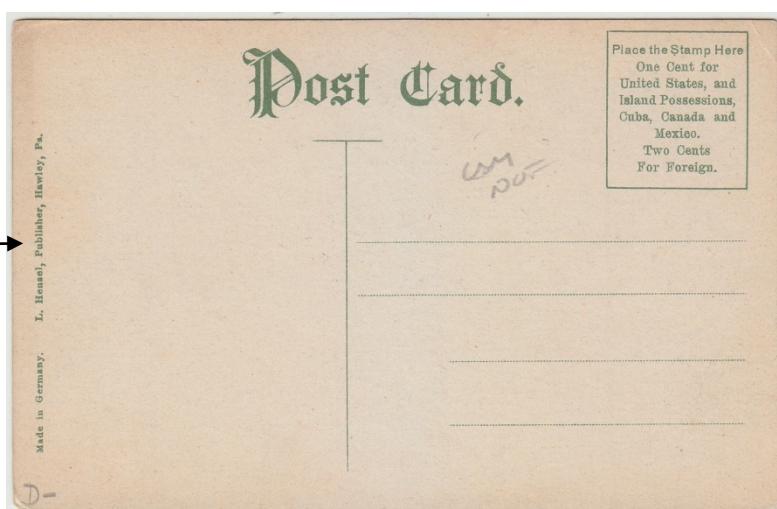
a. Photograph by L. Hensel, Hawley of "SEELYVILLE, WAYNE CO., PA." The Honesdale Branch of the D. & H., as it passes through Seelyville, can be seen in this photograph, which was purchased by the Carbondale Historical Society on October 8, 2017 from a vendor on E-Bay.



Honesdale  
Branch of the  
D. & H.,  
Seelyville,  
PA.

*Seelyville, Wayne Co. Pa.*

"Made in Germany.  
/ L. Hensel,  
Publisher, Hawley,  
Pa."



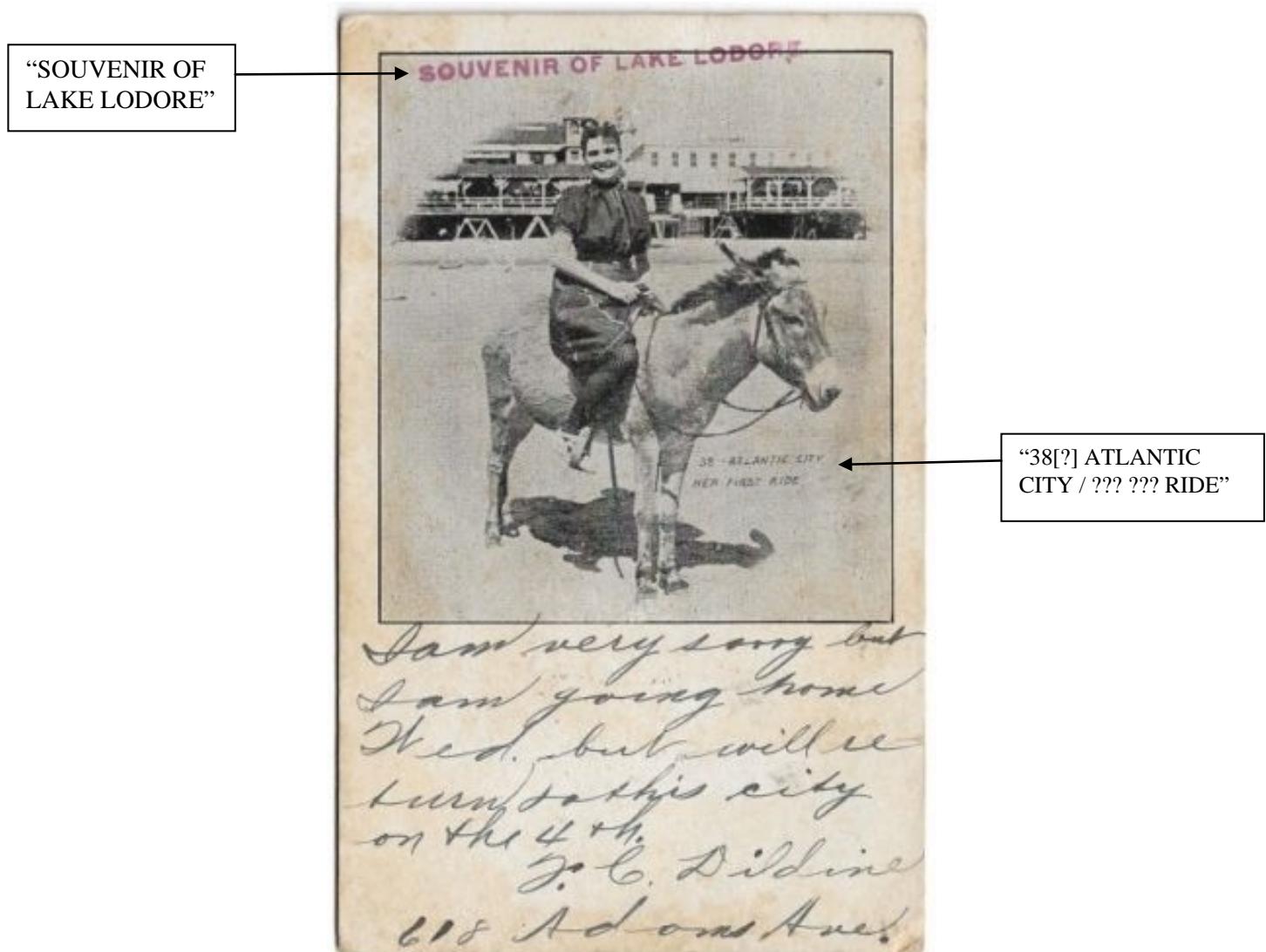
b. Post card view of "Seelyville, Wayne C. Pa." Post card in the collection of the Carbondale D. & H. Transportation Museum, Carbondale, PA.

D. & H. station in Seelyville, PA, on the Honesdale Branch.



*Seelyville, Wayne Co. Pa.*

3. Souvenir post card of Lake Lodore, offered for sale on E-Bay on October 8, 2017. Our thanks to John V. Buberniak for bringing to our attention this post card. This Atlantic City post card was transformed into a Lake Lodore post card when it was stamped “SOUVENIR OF LAKE LODORE.”



4. Offered for sale on E-Bay on January 7, 2018 was an enamel-on-sterling silver medal that was won by Frank Schoonover in 1893 in a 440 yard run for boys under 17 that was held at Farview. Our thanks to John V. Buberniak for bringing to our attention this item. Here are two photographs of the medal:



“440 YDS RUN / BOYS UNDER 17”  
RUN AT FARVIEW  
FRANK SCHOONOVER  
1893”

At the first annual D&H Field Day, held at Lake Lodore on August 15, 1925, a marathon race took place, starting at Seventh Street in Carbondale and ending at Lake Lodore. See Volume XX, pp. 224-231 in this D&H series. Therein, on page 227, we read:

“A Marathon race starting at 7<sup>th</sup> street, Carbondale, and ending at the lake, inaugurated the athletic events, with John Chapin leading a field of twelve starters. JOE DUNLAP of the Motive Power department finished second; 'Silent' Cawley of Moosic, Pa, third; and William Schoonover, fourth.”

William Schoonover, who finished fourth in this marathon race may well be related to Frank Schoonover, who won the 440 yard run in 1893 at Farview.

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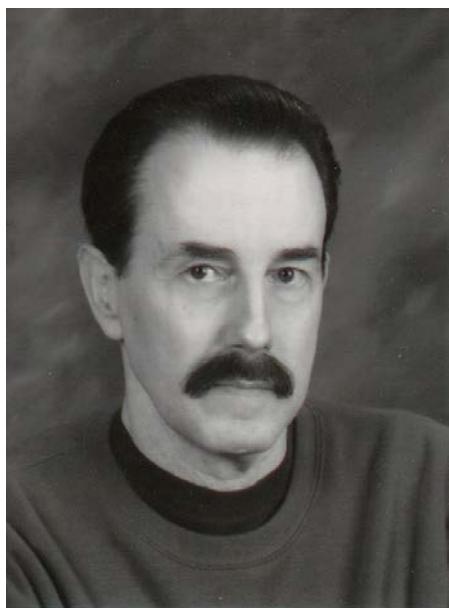
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### About the Author: *Biographical Portrait of S. Robert Powell*

S. Robert Powell is the younger of the twin sons born to Walter and Helen (Russell) Powell on December 12, 1943 in the General Hospital, Carbondale, PA. Through his father, he is a direct descendant of the Welsh bard Athenydd; through his mother, he is a direct descendant of two Mayflower families (Alden, Mullins) and two Revolutionary War soldiers (Michael Grinnell and Gideon Woodmansee).



SRP in 1996 as a Harford Fair director



SRP in the early 1980s as Lincoln



SRP as Kent in *An Evening at Ford's Theatre*, October 9-10, 2013

He was raised on Riverside Farm, the family farm in Fell Township, and there developed an early and strong interest in all aspects of rural and agricultural America, which he has maintained throughout his life.

He is a member of the Berean Baptist Church of Carbondale and, during his youth, was a member of Carbondale's Troop 2 of the Boy Scouts of America, in which he attained the rank of First Class. The scoutmaster was Norton Vail. The weekly meetings of the troop took place in one of the Vail & Sons livery stable buildings that were located behind the Berean Baptist Church and Richardson's Bakery in Carbondale. For two weeks in the summer, Robert and most of the members of the troop camped out in tents in the woods at Camp Hall at Fiddle Lake in Thompson.

He attended first through third grade in the Jefferson School, a one-room schoolhouse on Forty-Third Street in Fell Township, where Miss Christina taught all three grades. For grades 4 through 12, he attended schools in Simpson: Washington School (Main Street, 4<sup>th</sup> grade), Roosevelt School (Ontario Street, 5<sup>th</sup> and 6<sup>th</sup> grades), and Fell Township Junior/Senior High School (by the Reservoir, 7<sup>th</sup> through 12<sup>th</sup> grades). He pursued the academic course of study, was an honor student, and was awarded a diploma on June 8, 1961. In the graduation exercises, he delivered the Mantle Oration.

In the fall of 1961, he became a student at Penn State University at University Park, where he majored in Secondary Education, with a major in French. During his undergraduate days, he became a member of Lambda Chi Alpha, of which he ultimately was elected president. During the winter term, 1965, he did his student teaching at Wissahickon High School, Ambler, PA, where his master teacher was Miss Marjorie Smith. On June 12, 1965 he graduated from Penn State with a Bachelor of Arts degree in Education, professional certificate, Instructional I, French.

In June 1965, he moved to Washington, DC where, in the fall of 1965 he became a graduate student and graduate teaching assistant in French language and literature in the Department of Romance Languages at George Washington University. In the summer of 1966, he worked in the library of the Department of Agriculture on the Washington Mall. In the period July 23 to August 30, 1966, he traveled in France, Italy, and Switzerland. Under the direction of Dr. John Andrew Frey,

Robert wrote his master's thesis, titled "Impressionism in Le Ventre de Paris of Emile Zola," which was published in 1967. During the visit by La Comedie Francaise to Washington during Robert's time as a graduate student there, he appeared in several performances by that world renowned company of Pierre Corneille's *Le Cid*. On September 30, 1967, Robert was awarded a Master of Arts degree in French from the George Washington University. He is fluent in French, Italian, German, and Russian.

In the period 1967-1970, Robert was a graduate student and graduate teaching assistant in French at Indiana University, Bloomington, IN, where his major fields of study were the nineteenth-century novel and medieval literature, and where his minor fields of study were phonology and fine arts. As a graduate student at Bloomington, he established lifelong friendships with colleagues in the Department of French and Italian and in the academic community there, including C. Joel Block, Virginia Jones, Sheryl W. Gross, and Janice Glasser Carter. He was invited to become a member of Pi Delta Phi, the National French Honor Society, and of Phi Sigma Iota, the National Foreign Language Honor Society. His Ph.D. dissertation, much of which he wrote during a trip to France, Switzerland, Italy, and Austria in the period August 10--September 10, 1970, is titled *The Renaissance and Cubist Conceptions of Space and Art in the Nineteenth-Century French Novel*, which he wrote under the direction of Dr. John Houston, and which was published by the University of Michigan in 1974. On August 31, 1974, Robert was awarded a Doctor of Philosophy degree in French Literature from Indiana University.

During the academic year 1970-1971, Dr. Powell served as an Assistant Professor of French in the State University of New York, College at Oswego. In the summer of 1971, he lived at Hyde Park, NY, where he did independent research on aesthetics, art, and literary criticism in the Franklin Roosevelt Library.

In the fall of 1971, he moved to New York City, to be able to attend regularly live performances of classical music, opera, dance, and theater. During his twelve years in New York, he attended hundreds of performances at Carnegie Hall, the Metropolitan Opera, Philharmonic Hall, and many other venues where he attended live performances by all of the great performers of that era, including Birgit Nilsson, Luciano Pavarotti, Cynthia Gregory, Joan Sutherland, Beverly Sills,

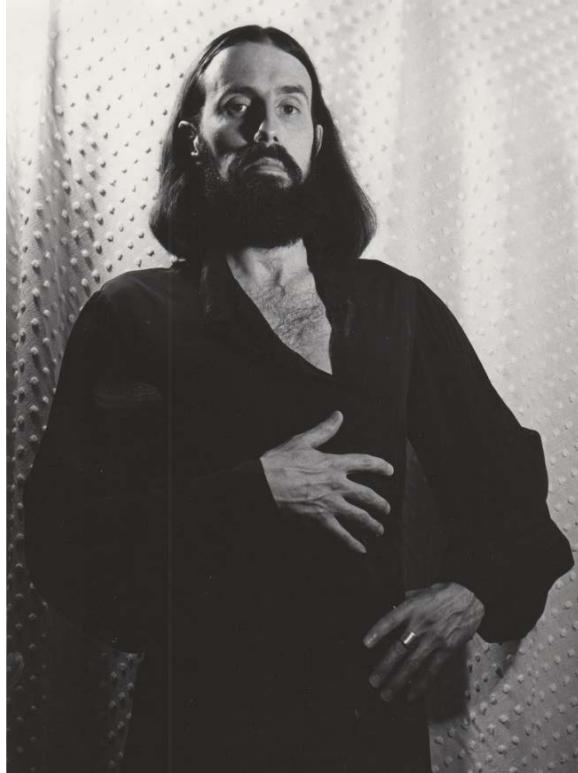
Leonard Bernstein, and Mikhail Baryshnikov. Among the legendary performances that Robert attended were (1) Richard Wagner's complete *Der Ring des Nibelungen* with Birgit Nilsson as Brunnhilde at the Met, and (2) all of Gustav Mahler's symphonies performed by the Chicago Symphony Orchestra under the direction of Sir Georg Solti at Carnegie Hall.

Initially, in New York, Robert worked in a freelance capacity as a multimedia and subsidiary rights editor for, among other organizations, UNICEF at the United Nations, American Management Associations, and Harcourt Brace Jovanovich. He then taught French language and literature in private schools and served as an adjunct lecturer in Modern Languages in Brooklyn College of the City University of New York (1973-1974).

In 1975, for a period of several months, Robert served as the amanuensis for the legendary concert pianist, Rosina Lhevinne. In the period 1979-1983, Robert worked in investment banking, initially in mid-town at Blyth Eastman Paine Webber, and then on Wall Street in corporate finance at Salomon Brothers with Bob Scully.

In the period April 6 to April 23, 1973, he traveled to Switzerland to serve as the best man in the wedding of his college friend, Earl C. Noelte, and to visit his twin brother Donald, then living and studying in London.

Both of the photographs of Robert shown below, both taken by his twin brother Donald, are from this period. The one on the left was taken during a visit to a country house "somewhere in England"; the one on the right, "the chenille portrait" was taken at the Russell Homestead, Carbondale.



In 1979, Dr. Powell, together with his twin brother, Donald W. Powell, created NORTHEASTERN PENNSYLVANIA, the historical quarterly about the eleven counties of northeastern Pennsylvania. Thirteen issues of that historical quarterly were published in the period 1979-1982. In 2009, the complete run of NORTHEASTERN PENNSYLVANIA was electronically scanned and published in the pdf format.

Under Dr. Powell's direction, two volumes of *Northeastern Pennsylvania Genealogical and Local History Reprints* were published (hardcover and microfilm) by Sheffield Publications in 1981 (Volume I) and 1982 (Volume II). During this period, Robert wrote the Powell/Russell family history, titled *Preparatory Notes for a Work to Be Entitled Walter Silas Powell and Helen Loomis Russell: Their Ancestors, Their Descendants*, published initially on November 24, 1978 (hardcover and microfilm), and then again in 1985 (microfilm), and then again, in an electronic format, in 2008.

Dr. Powell, in 1981, was one of the constituent members of the Committee to Restore Carbondale City Hall, which merged, in 1982, with the Carbondale Historical Society, with Dr. Powell serving as the president of the new organization, a post which he continues to hold. Under the leadership of Dr. Powell and David Baum, then editor of the *Carbondale News*, the Durfee Memorial Clock in the tower of Carbondale City Hall was restored. In addition, significantly, the Carbondale Historical Society led the initiative that saved from demolition Carbondale City Hall (listed, through the efforts of the Historical Society in the National Register of Historic Places on January 6, 1983) and established in the City of Carbondale a heightened consciousness of the importance of local history and historical preservation in the history of a city.

In the photograph shown here, Dr. Powell, in a promenade mode, heads the Historical Society's unit as it moves up North Church Street in a Carbondale Pioneer Days parade from this period.



On April 20, 1983, Robert moved from New York to Carbondale, in order to devote significant time and energy to the historical preservation movement in Carbondale. During his first six months in Carbondale, Robert lived in the Gillis Block on Park Place. In the period October 14, 1983—June 19, 1984, at the invitation of the Colville family, he moved into and became the resident caretaker of the Eli E. Hendrick House (formerly the residence of Charles Pemberton Wurts) in Hendrick Park. In the period May-October 1983, he worked as a staff writer for the *Carbondale News*, in which dozens of his articles on historical topics were then published.

For more than 25 years, Dr. Powell served as the master of ceremonies for the concerts by the Crystal Band of Scranton. Dr. Powell's reading of the patriotic text "I Am the Nation" as the band performed a suite of patriotic music was highly acclaimed by many. The annual Carbondale Christmas concert by the Crystal Band, sponsored jointly by the Carbondale Historical Society and the Berean Baptist Church as a Christmas gift to the community, is regarded by many as one of the highlights of the Christmas season in Carbondale. The concert that took place on December 22, 2013 marked the 30<sup>th</sup> consecutive year that the Historical Society has hosted a Christmas concert in Carbondale by the Crystal Band.



SRP as a Harford Fair director



SRP as a young boy

In the period 1981-1989, he served as president of Carbondale's Maplewood Cemetery, whose interment records were saved from oblivion by Dr. Powell, who subsequently wrote a history of the cemetery. In 1983, Dr. Powell, shown above right in 1953 at the age of 10, was named to the Board of Directors of the Carbondale Public Library, on which he continues to serve. In 1987, he became a director of the Elkdale Cemetery Association and wrote a history of that cemetery. That history, significantly, contains copies by Dr. Powell of all of the inscriptions on all of the stones in that cemetery.

On June 19, 1984, Robert moved into and served as resident caretaker of the former Elkdale Baptist Church, Elkdale, where he lived until January 8, 1991. From the fall of 1984 until the fall 1990, Robert served as a substitute teacher in area high schools (Carbondale Area, Lakeland, Mountain View, Susquehanna Community, Blue Ridge).

For the academic year 1990-1991, he served as a Visiting Assistant Professor of French at Susquehanna University, Selinsgrove, PA.

On July 28, 1991, he returned to live at the James and Margaret Russell Homestead in Fell Township, a dairy farm which was established by his Scottish ancestors in the early 1840s and which through his efforts was named a Pennsylvania Century Farm on March 7, 1986.

The Russell Homestead is now the Homestead Golf Course, which was created by Robert's parents, Helen and Walter Powell, and by Robert's late younger brother, Russell. The Homestead Golf Course, presently owned and operated by Robert's brother Donald, has been transformed by him into what many regard as one of the most beautiful in Pennsylvania.

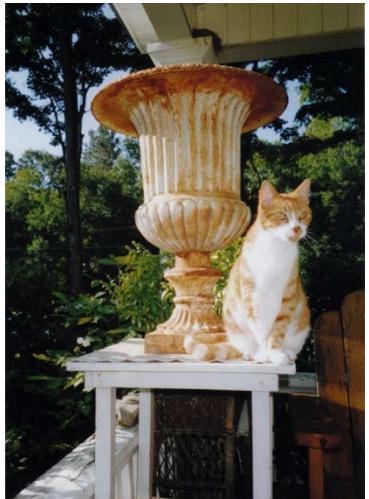
In 1997, Robert established and presently maintains on a portion of the James and Margaret Russell Homestead in Fell Township a herd of Hereford cattle, shown here, in memory of his dairying ancestors.



In the period 1992-1995, Robert served as a member of the humanities and philosophy adjunct faculty of the College of Liberal Arts at the Worthington Scranton campus of the Pennsylvania State University. One of the books that is always included on the reading list of every humanities course that Dr. Powell has ever taught is his favorite book, Virgil's *Aeneid*, which is regarded by many scholars, Dr. Powell among them, as the principal secular book of the western world. Two of Dr. Powell's other favorite books, Shakespeare's *King Richard the Third* and *Henry the Fifth*, are included, whenever possible, on every academic syllabus that Dr. Powell has ever created. Dr. Powell is the author of three books in the field of comparative aesthetics, including *Comparative Aesthetics: A Workbook*, which was published in 1978.

Other of Dr. Powell's constant passions in the realm of the arts include everything that Igor Stravinsky wrote; the nineteenth-century French novel (especially Balzac, Flaubert, and Zola); the music of Serge Prokofiev, Richard Wagner, Gustav Mahler, Sergei Rachmaninoff, and Aaron Copland. Over the years, he has established a distinguished collection of pre-Civil War American coin silver flatware.

Robert's best friend and confidant, for close to two decades, was a yellow and white American shorthair cat named Pussy Cat, shown here at home, who died on April 12, 2010.



In the period 1995-2000, Robert worked as an editor in product development of ICS Learning Systems, Scranton. During that period he served as editor for dozens of books and wrote several books, including *Winning with Words*. His fields of specialization as an editor were gastronomy and the English language. He has been characterized as a superior editor, and his keen skills and insight as an editor have resulted in several celebrated letters to the editor of *The Editorial Eye*.

Robert is a first class cook who especially likes to bake and to can fruits and vegetables. He makes his own maple syrup, with sap from maple trees on the family homestead.

Robert is an indefatigable keeper of records. Virtually all of his personal papers and journals have been organized and microfilmed or electronically scanned. In addition, microfilm editions of all of his poultry papers for the period 1988-2001 are now in the archives of the State Library of Pennsylvania at Harrisburg, the National Poultry Museum and Heritage Center at Bonners Springs, KS, and the National Agricultural Library at Beltsville, MD. Those poultry papers, 1988-2001 (6,464 pages) are not only intrinsically interesting, but also will be useful to

researchers and poultry enthusiasts of the present and future generations who are interested in knowing about exhibition poultry in the United States during the closing years of the twentieth and early twenty-first centuries.

From 1982 to the present time, he has served as the executive director of the Carbondale Historical Society and Museum, and together with his colleagues and good friends John V. Buberniak and Joseph Pascoe has led the Society into the twenty-first century. He is a recognized authority on the history of Carbondale and the Lackawanna Valley, with more than 100 published articles and many books in the field of local history and genealogy and is now writing a 24-volume series of books on the Delaware and Hudson Canal Company in the nineteenth century. He is well known as a speaker and lecturer and annually gives many talks and hosts many seminars on local history in the Carbondale schools, in the community, and in the Lackawanna Valley.

Under Dr. Powell's direction a major rehabilitation of the Historical Society's headquarters on the third floor of Carbondale City Hall took place in the period July 24--November 25, 2006. Under the leadership and direction of Dr. Powell and John V. Buberniak, the Carbondale D&H Transportation Museum, an adjunct organization to the Historical Society, has been established on the third floor of Carbondale City Hall.

Throughout his life, Dr. Powell has made a conscious effort to preserve historical records. His brother Donald and he initiated and carried to successful completion the project of having microfilmed all of the nineteenth-century and early twentieth-century newspapers in the archives of the Carbondale Public Library and the Carbondale Historical Society.

Under Robert's leadership, 721 issues of *Poultry Press*, from the period 1943-2000, were microfilmed, and a microfilm copy of this astonishing archive of exhibition poultry history is now in the archives of the National Agricultural Library in Beltsville, MD.

In the summer of 2009, Robert donated the 721 original paper copies of *Poultry Press* in question, as well as the originals of the 14 rolls of professionally produced

35 millimeter silver archival microfilm of those 721 issues to the Albert R. Mann Library at Cornell University, where they are now housed in the library's Special Collections, and where they will serve as primary research materials for present and future generations of poultry and agricultural historians.

He has a strong interest in Homing Pigeons and flies his birds regularly from as far away as 300 miles. He also has a strong interest in another sporting breed of pigeon, the Flying Tippler, and wrote a history, now on microfilm, of the Flying Tippler Association of America.

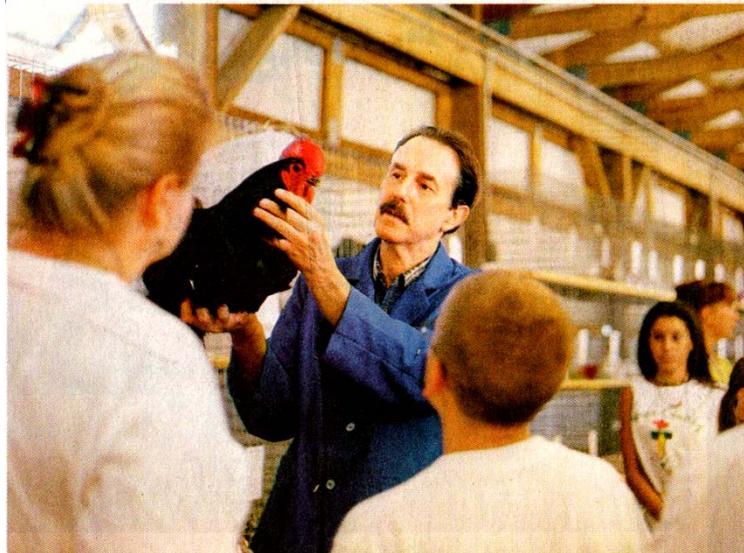
Throughout his life, Robert has maintained a strong interest in exhibition poultry. He was one of the founding members of Fancy Feathers, a 4-H poultry group in Susquehanna County, PA. He was one of the founding members (November 2003) of the Endless Mountains Poultry Association, with headquarters in Harford, PA.

Robert is also a licensed poultry technician for the Commonwealth of Pennsylvania. On July 15, 1998, he became a licensed judge of standard and bantam exhibition chickens (license #1144) for the American Poultry Association, and judges poultry shows all across America. Under his direction, Guinea Fowl (pearl, lavender, and white) were admitted to the American Poultry Association's *American Standard of Perfection*.

In 1992, he was named a Master Exhibitor (#250) by the American Poultry Association. As of July 15, 2009, his birds have been awarded 439 Master Exhibitor points by the APA. On November 14, 1998, he was named a Grand Master Exhibitor/Breeder of Partridge Plymouth Rocks (194 Master Exhibitor points on Partridge Plymouth Rocks as of July 15, 2009) by the APA.

He is a nationally recognized writer on the subject of exhibition poultry. Virtually all of the yearbooks and publications of the American Poultry Association, and a great many of the issues of the national poultry newspaper, *Poultry Press*, from the early 1980s to the present, contain articles by Dr. Powell. In 1998, he was one of only two American poultry authorities whose contributions were published, in German, in the highly regarded German encyclopedia of bantam poultry of the world, *Handbuch der Zwerghuhnrasen der Welt*.

In the photograph below on the left he is shown, at home, holding one of his Black-Breasted Red American Game bantam cocks.



In August 2005, he judged the poultry show at the New Jersey State Fair. That poultry show, and exhibition poultry in general, was the subject of a substantial article, together with the photograph above on the right, in the August 11, 2005 issue of *The New York Times*. In that photograph, Robert is shown judging the Australorp males. Robert's mentor as a poultry judge was George Schroeder of Prompton, PA, one of the leading poultry judges in America in the twentieth century.

Robert served as a national director (District 2) of the American Poultry Association for the period 2000-2006. His accomplishments as a national director of the APA are many. Under Robert's leadership and through his initiative, the 2004 annual meeting and convention of the American Poultry Association was held in District 2 at the Yankee Classic in Syracuse, NY, on October 23-24.

Through Robert's efforts, over the years, nine people have been presented with APA honor/lifetime achievement awards for their involvement with exhibition poultry (George Schroeder, C. William Ryan, Jerry Sliker, Fred Herrick, Bob and Lorna Rhodes, Kay St Amour, Bill Gladhill, and Charles Wabeck). Under Robert's

leadership, the three and one-half year process that resulted in the admission of pearl, lavender, and white Helmeted Guinea Fowl to the APA's *American Standard of Perfection* was successfully completed in January 2004.

Together with Duff H. S. Wehle, he wrote a history of the Madison Square Garden Poultry Show, 1883-1950, which was published in October 2006 in an electronic format and later in the pages of *Poultry Press*. He participated actively in the process of correcting and revising the 1998, 2001, and 2006 editions of the American Poultry Association's *American Standard of Perfection*.

As the recording secretary of the John and Elizabeth (Crittenden) Griswold family reunion, Robert saved for posterity all of the records of that colonial American family (Robert's maternal grandmother's paternal grandmother was a Griswold), and coordinated the centennial reunion of those Griswolds in 2006. As a spin off of his historical research on the Griswold family, Dr. Powell wrote the history of all of the Pioneer Day celebrations held in Clinton Township, Wayne County, PA in the period 1915-2006, and the Clinton Center Baptist Church, 1831-2006, which was published in 2008. He also established the marriage and death index for the *Dundaff Republican / Northern Pennsylvanian* (February 14, 1828--December 23, 1840), one of the pioneer newspapers in northeastern Pennsylvania.

Robert was one of the poultry superintendents at the Harford Fair, 1992-2007, and shows at least 100 birds at the annual Harford Fair and the annual Wayne County Fair. One or more of his birds invariably is selected by the judges to be placed on Champions' Row at these local fairs. Robert is a nationally recognized breeder and exhibitor of standard Partridge Rocks, Malays, and Black Orpingtons, among many other breeds. He was elected a director of the Harford Fair in 2001 and served that fair in that capacity until 2006. In 2004, he was elected First Vice President of the Harford Fair.

His contributions to the success of the poultry show at the Harford Fair during those years are many. He is very proud of the fact that through his efforts and under his direction the poultry show at Harford was upgraded professionally to become an officially sanctioned show by the American Poultry Association, whose poultry classifications were then adopted by the Harford Fair. Dr. Powell is

especially proud of the fact that in 1998 he was able to establish and endow a perpetual trophy at the Harford Fair in memory of his poultry friend Anson W. Tiffany. The trophy is awarded annually to the poultry exhibitor at the Harford Fair who exhibits the Reserve Champion of the Poultry Show.

Robert is a nationally recognized poultry celebrity. In 1997, he organized and orchestrated the day-long visit by Martha Stewart to the Twenty-First Annual Spring Show and Auction of the Central Pennsylvania Avian Club at Bloomsburg, PA on May 3-4.

At that show, Martha Stewart was asked by Robert to select the most beautiful bird in the show. In the photograph below on the left, Martha Stewart is shown with Robert as she names a White Crested Blue Polish hen as the most beautiful bird in the poultry show. Footage shot by the Martha Stewart production team on May 3 became the basis of a 30-minute show on exhibition poultry that has been broadcast (initially on September 18, 1997) and re-broadcast many times (November 28, 1997, September 17, 1998, February 4, 2002, September 30, 2002) on the Martha Stewart program on national television.



In addition, Robert actively promoted exhibition poultry and the book *Extraordinary Chickens* by Stephen Green-Armytage through a nationally televised broadcast appearance on the *Today* show on October 25, 2000, with a

dozen of Robert's exhibition birds. In the photo on the right, above, Robert (tweed jacket) is seen with Messrs. Green-Armytage and Lauer on the *Today* show set during that broadcast. Robert also appeared on regional television, Channel 61, on the Patty Lawler show on November 21, 2007, Thanksgiving eve, with a Slate turkey hen.

Robert continues to breed and show exhibition poultry. At the 2011 Wayne County Fair Poultry Show, one of his Partridge Plymouth Rock cockerels was Champion Particolored Standard; also, a Blue Bar Racing Homer young cock was Champion Pigeon. At the 2013 Wayne County Fair, one of his Partridge Plymouth Rock hens was named Champion Parti-colored Standard chicken, and a White Racing Homer young hen was named Champion Pigeon.

At the 2011 Harford Fair Poultry Show, one of his Partridge Rock cockerels was named Champion American, and a Black Breasted Red American Game cockerel that was shown by Robert was named the Grand Champion Bird in the Show, in which over 800 birds were exhibited. In the photograph below taken by Attorney Jeff Nepa, Robert is shown holding that American Game cockerel.



On the occasion of the Clifford Township Bicentennial celebration in 2006, Robert, as an authority on local history, was interviewed during the production of the DVD *Clifford Township Two Hundred Years 1806-2006* and appears therein as himself; also as the voice-over in the introduction to that award winning DVD.

In June 2008, under Dr. Powell's leadership, the Carbondale gallery of the Carbondale Historical Society and the D&H galleries of the D&H Transportation Museum in City Hall were officially re-opened to the public following the extensive renovations there in 2006. These galleries, together with the Society's research archives on local history, genealogy, the D&H railroad, and anthracite mining constitute a community and regional asset of great value, an asset to which Dr. Powell, as a volunteer, has devoted, with great enthusiasm and pleasure, more than three decades of his life.

As a recognized authority on local history, Dr. Powell is frequently consulted on questions of local history. In the summer of 2009, he was interviewed, on film, by a community group with a strong interest in the Blakely Poor Farm. To the complete surprise of Dr. Powell, a portion of that filmed interview was used as background information in a nationally televised program on the Animal Planet on allegedly paranormal sightings and occurrences at the Blakely Poor Farm.

In 2009, Dr. Powell established and endowed the local history awards that are presented annually to graduating seniors at Carbondale Area High School. Following Dr. Powell's death, those awards will be known as the S. Robert Powell Memorial Awards in Local History.

In 2004, under the direction of Dr. Powell, a Carbondale Saint David's Day Committee was formed (committee members: Barbara James Campbell, Jeffrey Nepa, Esquire, Joseph Pascoe, and Eleanor D. Spellman) for the purpose of celebrating Saint David's day annually, in Carbondale, with a dinner, concert, and historical program.

These Welsh heritage evenings, which always take place on March 1, have quickly become a highly regarded and much anticipated feature of the cultural year in Carbondale.

On March 1, 2010, the seventh annual Welsh Heritage Evening in Carbondale was celebrated in Durfee Parish Hall of the Trinity Episcopal Church, River Street, Carbondale. The speaker for the evening was Dr. Richard M. Loomis, whose topic was *Singing in Welsh (O bydded i'r heniaith barhau)*.

At that 2010 Welsh Heritage Evening, Brian Kaeb, president of the Lackawanna County Saint David's Day Society, celebrating its centennial anniversary in 2010, presented, on behalf of the Society, a commemorative plaque to Dr. Powell in recognition and appreciation of his dedication to the preservation of the Welsh heritage in northeastern Pennsylvania. At the 103<sup>rd</sup> anniversary banquet of the Lackawanna County Saint David's Society on March 1, 2014, Dr. Powell was presented the "Saint David's Society of Lackawanna County President's Award in Recognition for Outstanding Contribution, Dedication, and Preservation of Welsh Heritage in Northeastern Pennsylvania" by President James T. Arscott, D. O.

In the photograph given below, taken by Historical Society member Henry J. Loftus, Dr. Powell is shown receiving that plaque from Brian Kaeb in 2010.



On September 3, 2011, in ceremonies conducted at Railfest 2011 at Steamtown National Historic Site, Scranton, PA, Dr. Powell was presented with the Alan Sweeney Memorial Award (The Alan Sweeney Award / In Recognition of / Unwavering Dedication To The / Interpretation Of Local History / To Encourage Our Heritage / Throughout The Lackawanna Valley). The award is presented annually, in memory of the late Alan Sweeney, by the Lackawanna Historical Society, Mary Ann Savakinas, Executive Director. Dr. Powell is the third recipient of this high honor. In 2009, the Alan Sweeney Award was presented to Dominic Keating; in 2010 the award was presented to Norm Barrett. In the photograph given below, taken by Kathy Keating, are (from the left) Dominic Keating, Mary Ann Savakinas, Norm Barrett, and Dr. Powell.



Always a promoter of the history of the Lackawanna Valley, Dr. Powell was interviewed by the Lackawanna Heritage Valley Authority in the preparation of the documentary film about the LHVA and its accomplishments in the 20 years of its existence. The world premiere of *Legacy: The Story of the Lackawanna Heritage*

Valley took place at the Lackawanna Historical Society's 2011 annual dinner on September 14, 2011 at the Lackawanna Cultural Center. Speaking on behalf of the Carbondale Historical Society, the City of Carbondale, and the upper Lackawanna Valley in that documentary is Dr. Powell.

In 2012, television station WVIA and the City of Carbondale produced the documentary titled *Our Town Carbondale*. S. Robert was a key figure in the production of the documentary and appears throughout the film, speaking on behalf of the Pioneer City. The documentary was a huge popular success. In the photograph below, at the world premier of the documentary in the WVIA studios, S. Robert is shown talking with the producer, Lisa Mazzarella.



Robert continues to be a prominent figure in all events hosted by the Carbondale Historical Society and the City of Carbondale. In the photo given below, he is seen with *Classic Voices* during a performance that that a cappella group (Rev.

Jay Best, conductor) gave on Pat Monahan's front porch on Washington Street in 2010, as part of the annual historic Carbondale "Trolley Tours" hosted by the Historical Society.



In the photograph given below, he is shown here with his good friends Joe Pascoe, far left, and Julie Esty, in a photo that was taken in Carbondale's Memorial Park during the 2012 Carbondale Pioneer Nights Festival:



Always a key figure in the celebration of Saint David's Day in Carbondale, he is shown here as Master of Ceremonies at the 2011 Saint David's Day dinner in Carbondale.



Robert also became a member in 2012 of the Dearly Departed Players, a Scranton-based theatrical group that annually hosts the Dunmore Cemetery Tour, among other annual productions. Given here is a photo of the ensemble in Dunmore Cemetery in 2012. S. Robert is in the back row, far left.



In the 2012 Dunmore Cemetery Tour, Robert portrayed the legendary James Archbald, a major figure in the history of the Delaware and Hudson Canal Company and later the first mayor of the City of Carbondale:

Here is S. Robert, standing in front of the Archbald obelisk in Dunmore Cemetery, just before his performance in 2012:



Here is S. Robert during the performance itself:



In 2013, Robert portrayed John B. Smith, the superintendent of the Pennsylvania Coal Company's Gravity Railroad. Here is S. Robert during a dress rehearsal in September 2013:



In the photograph given below, Robert is shown waiting for the spectators to gather around the John B. Smith monument, before his performance as John B. Smith in the Dunmore Cemetery on October 13, 2013:



In the photograph by Duane Morris given below, Robert is shown performing the part of John B. Smith on October 13, 2013:



Given below is a photograph of S. Robert Powell, in the persona of John B. Smith, that was taken by Thomas Klopfer of Archbald on October 13, 2013, during the annual Dunmore Cemetery tour by the Dearly Departed Players.



More theatre: Here are some photos of SRP, and others, that were taken by Dorothy Loney during rehearsals and during the two performances on November 9 and 10, 2013, in Temple Israel, Scranton, of Julie Esty's play, *An Evening at Ford's Theatre*. In this play, SRP portrayed the character Kent, a gentleman who was present in Ford's Theatre on the night that Lincoln was shot. Note the many different hand and arm gestures of SRP in these photographs.



SRP and Billy Loney, at dress rehearsal



SRP and Jim Patterson, at dress rehearsal



SRP with Nelson Wood and Jennifer Ochman



SRP with Nelson Wood and Julie Esty





SRP with Christine McGeachie and Julie Esty







SRP with Julie Esty, author of *An Evening at Ford's Theatre*





SRP and Jim Patterson, curtain call

On October 20, 2013, Robert exhibited some of his standard Partridge Plymouth Rocks and Malays at the 2013 Yankee Fall Classic Poultry Show in Syracuse, NY. A wheaten Malay hen that he showed was named Champion All Other Standard Breeds and Grand Champion Standard of the show.

Robert continues to work to record and to preserve the history of the Welsh people who came to northeastern Pennsylvania throughout the nineteenth century to work in the anthracite mines and for the railroads and to build new lives for themselves here.

In recognition of his continuing efforts in that regard, Robert was awarded the President's Award by the Saint David's Society of Lackawanna County at the 2014 Saint David's day dinner hosted by the Lackawanna County Saint David's Society and the Carbondale Saint David's Day Committee.

In the photograph given below, taken by Henry J. Loftus, we see Robert offering his thanks to the Society and to the assembled guests at the dinner for the high honor that had been bestowed on him and, at the same time, reporting new facts that he had recently learned about the pioneer Welsh settlers of Carbondale and the Lackawanna Valley.

In the course of his remarks, Robert reported that he had recently learned that these annual banquets on Saint David's Day in Lackawanna County were started in the early years of the twentieth century by the members of the Tabernacle Congregational church on South Hyde Park Avenue, which was organized on June 23, 1886 by a group of 82 young Welsh people, among whom were James W. Reese and Frances Davies, the maternal grandparents of Robert's father, Walter Silas Powell. Later in the century, beginning in 1911, the Lackawanna County Saint David's Society (LCSDS) was organized and from then on the LCSDS has hosted an annual banquet on Saint David's day.



Among the distinguished guests at the dinner was the Honorable Justin M. Taylor, Mayor of the City of Carbondale, who issued a proclamation to commemorate the

high honor that had been bestowed on Dr. Powell by the Welsh community of northeastern Pennsylvania. The proclamation issued by Mayor Taylor concludes with these words: "I do hereby proclaim Saturday, March 1, 2014, as Dr. S. Robert Powell Day and ask that all citizens recognize and honor this day, and this gentleman, for years to come—as our forefathers would want and expect from us."

For many years, Robert hoped to find in an antique store or in an attic a real straw boater/Panama hat. In the summer of 2014, Robert located a source for such a hat on the Internet and bought himself a straw boater. In the photo given below, taken by Jerry Williams at the reception at the Pioneer Plaza Best Western in Carbondale on the evening before the premier Northern Tier Towns Tour, July 6-8, 2014 (Robert served as the tour guide), you see Robert wearing his new hat and a special Pierre Cardin bow tie.



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On December 6, 2014, at the annual meeting of the American Poultry Association in Knoxville, TN, Robert was presented with a lifetime achievement award by the APA. Here is the article about this award that was published in the 2015 *American Poultry Association Yearbook*, pp. 70-73:



**S. Robert Powell**

Robert is the only member of the APA who has been named a Grand Master Exhibitor of standard Partridge Plymouth Rocks, which he has raised and shown for over 30 years, his birds having been named Champion Standard and Grand Champion of the Show on many occasions over the years. At present he also raises and shows standard Malays, his original stock having come from Basil Smith, that bloodline has been enriched by Robert during the past decade with birds of the highest quality from Carl Brantley. At the Yankee Fall Classic in Syracuse, NY in October 2013, a Wheaten Malay hen shown by Robert was named Champion Standard Chicken.

In 1998 Robert was licensed by the APA to judge standard and bantam chickens, and since then has judged 90 shows from Boston to Billings—and at dozens of places in between. He is best known as a judge of standard chickens. Robert's mentor in poultry judging was the late George Schroeder, the legendary breeder and exhibitor of bantam Cochins, who was widely regarded as one of the leading judges of exhibition poultry in America in the twentieth century.

Robert is a prolific writer on exhibition poultry and scores of his articles on all aspects of poultry husbandry, history, and management have been published in the yearbooks of the APA, in "News and Views," and in other national poultry publications over the past 30 years. In 2006, he and Duff H. S. Wehle wrote and published "The History of the Madison Square Garden Poultry Show, 1883-1953." In 1998, Robert wrote the American Game bantam section of the highly acclaimed German encyclopedia of bantam poultry, "Handbuch der Zwerg-hunhrassen der Welt" that was published that year.

Robert believes strongly that it is important to establish and maintain text and photo archives about exhibition poultry—for the record and for research purposes—and to that end has donated microfiche copies of his poultry papers for the period 1988-2001 to both the National Poultry Museum and Heritage Center in Bonners Springs, KS, and to the National Agricultural Library in Beltsville, MD.

In 2009, Robert donated to the Albert R. Mann Library at Cornell University his personal collection of 721 issues of "Poultry Press" for the period 1943-2000 (originals plus 14 rolls of 35 millimeter silver archival microfilm). Through funding from the American Poultry Historical Society (Madison, WI) a copy of the complete set of this microfilm edition of "Poultry Press, 1943-2000" has also been placed in the National Agricultural Library in Beltsville, MD.

Robert served as APA District 2 director for the period 2000-2006. To begin his service to the APA, he created and launched the APA District 2 webpage, which he actively managed throughout his six years of service as APA director. In the six years that he served as APA District 2 Director, he attended every meeting of the APA's Board of Directors and every APA general-membership meeting (Woodstock, Wapakoneta, Lincoln, Fort Worth, Columbus, Lucasville, Lake City, Syracuse, Delmarva). At those meetings he actively advocated the interests and voiced the concerns of APA members in District 2 and elsewhere before the governing board and the membership of the organization.

As an APA director, he served as Chairman of the APA Membership Committee, which not only created and published a new APA membership recruitment

brochure but also distributed 7,500 copies of that brochure throughout North America. In addition he initiated a survey of APA members who allowed their memberships in the APA to lapse and requested their opinions of the quality and value to them of the APA's products and services. Robert also participated actively in the process of correcting and revising the 1998, 2001, and 2006 editions of the APA's "American Standard of Perfection."

During the poultry and premises identification hysteria in the first decade of this century, Robert chaired the APA/ABA Joint Committee on Poultry Identification (with David Adkins, Pat Lacey, Don Schrider, and Bill Wulff) that worked with the US Department of Agriculture NAIS/APHIS to produce the draft document in which were described the bird identification standards and procedures that might be followed in the exhibition, 4-H, youth, and backyard poultry industries to identify birds and track them to specific premises in the event of an outbreak of a disease of concern within 48 hours after discovery of that disease. As a result of the work by this committee and its members, the USDA and a broad range of commercial and non-commercial poultry and avian groups now regard the APA and the ABA as important participants in all discussions and meetings relative to the Poultry Subchapter of the National Animal Identification System.

Robert is an enthusiastic promoter of exhibition and backyard poultry. In 1997, he arranged and orchestrated the day-long visit by Martha Stewart on May 3<sup>rd</sup> of that year to the ABA Semi- Annual Meeting and Convention, hosted by the Central Pennsylvania Avian Club, in Bloomsburg, PA. At that show, Martha Stewart chose the most beautiful bird in the show, a White Crested Black Polish hen, shown by Joel and Ellen Henning. Footage that was shot by the film crew that accompanied Martha Stewart on this visit to Bloomsburg became the basis of a 30-minute program about exhibition poultry that has been broadcast nationally on Martha Stewart Living no less than seven times. In conversations with Martha Stewart in recent years, Martha Stewart has told Robert that the poultry show program at Bloomsburg has been one of the most popular shows in the history of the Martha Stewart show. Robert also actively promoted exhibition and back-yard poultry and the book "Extraordinary Chickens" by Stephen

Green-Armytage through an appearance on the "Today" show on October 25, 2000 with a dozen live exhibition birds. The positive poultry publicity that resulted from those national television broadcasts has contributed significantly to the present-day enthusiasm from coast to coast for back yard and exhibition poultry.

On Saturday, August 6, 2005, Robert judged at the New Jersey State Fair at Augusta, NJ. A writer and a photographer from the "New York Times" were also there. The result of this fortuitous combination of raw materials was the article "Scratch a Suburb, Find a Chicken" by Ken Druse that was published in the August 11, 2005 issue of the "New York Times" (lead-in on page 1; story with photographs on page 1 of House and Garden Section). The positive consequences for the exhibition poultry hobby from this article were many, in that it opened the door to exhibition poultry for a great many potential exhibition poultry enthusiasts everywhere.

Together with the Rev. Roland Romig and Don Perrin, Robert initiated and guided the three and one-half year process that resulted in the admission of pearl, lavender, and white Helmeted Guinea Fowl to the APA's "American Standard of Perfection" (January 2004, Lake City, FL). At the qualifying meet for Guinea Fowl, judged by Curtis R. Oakes, at Lucasville in October 2003, there were 220 Helmeted Guinea Fowl, of 13 varieties, in the show. The Champion Guinea of the Show was a Pearl hen shown by S. Robert Powell.

Robert was born and raised in northeastern Pennsylvania on a family farm that was established by his Scottish ancestors in the 1840s. In tribute to those Scots and to his English ancestors as well, Robert maintained for many years on that homestead, now designated a "Century Farm" by the Commonwealth of Pennsylvania, a herd of Hereford cattle. Robert's father, a grandson of the Welsh bard Athenydd, raised production standard Light Brahma, for meat and eggs, and White Holland turkeys, for the holiday markets.

Robert is a retired college teacher, who was awarded a Ph.D. by Indiana University in Bloomington in 1974, and over the years has taught French Language and Literature and the Humanities at George Washington University, Indiana University, SUNY Oswego, Brooklyn College, Susquehanna

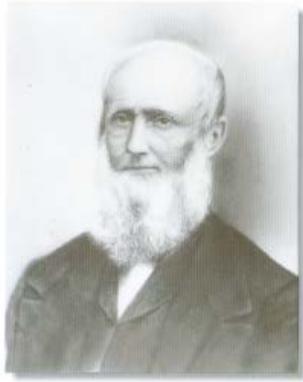
University, and Penn State University. He has been president of the Carbondale Historical Society for the past thirty years and is presently writing a 24-volume series on the Delaware and Hudson Canal Company's Gravity Railroad, the first commercially successful railroad in America. The first five volumes in that series were published in October 2014. In addition to raising and showing standard Partridge Rocks and Malays at the present time, Robert also raises Mute Swans and Jacobin pigeons.

To be the recipient of a lifetime achievement award by the American Poultry Association is a great honor and Robert is very pleased to here express his sincere thanks to the present officers and directors of the APA for this important award."

\* \* \* \* \*

In the autumn of 2014, following twelve years of research and writing, Robert completed Volumes I-V of the 24-volume series that he is now writing on the history of the Delaware and Hudson Canal Company. Those five volumes were published, in an electronic format, by the Carbondale Historical Society on October 9, 2014, the 185<sup>th</sup> anniversary of the opening of the D&H Gravity Railroad from Carbondale to Honesdale.

Here are the dust jackets on these five volumes:



**John B. Jervis**, who worked with Benjamin Wright on the construction of the Erie Canal, was the most noted civil engineer of his time. On March 14, 1827, he was named Chief Engineer of the Delaware and Hudson Canal Company and served the D&H in that capacity for two years. It was Jervis who designed the Gravity Railroad that opened on October 9, 1829. Construction of the road began in 1827 and was completed in June of 1829. The construction cost was \$3 million.

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D. & H. C. Co. Gravity Railroad: 1829 Configuration

**Vol.**  
**01**

**DVD**  
ROM  
2014

Delaware and Hudson Canal Company  
Gravity Railroad: 1829 Configuration



*Gravity Railroad Monument, Gravity Park, Carbondale, PA.  
Photograph by S. R. Powell, 2011*

By  
**S. Robert Powell, Ph.D.**

October 9, 2014

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



**John Wurts**, who married Martha Potts Haskins, was an 1813 graduate of Princeton College. He served as president of the Delaware and Hudson Canal Company from April 13, 1831 to March 15, 1858. His nephew and adopted son, Charles Pemberton Wurts, was a key figure in the history of the D&H. Beginning in 1849, when the health of John Wurts began to fail, his brother Maurice acted as temporary president of the D&H. John Wurts died in Rome on April 23, 1861.

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D. & H. C. Co. Gravity Railroad: 1845 Configuration

**Vol.**  
**02**

**DVD**  
ROM  
2014

Delaware and Hudson Canal Company  
Gravity Railroad: 1845 Configuration



*John Archbold: Oil on canvas, from a painting by Elliott, dated 1845,  
copied by J. W. Baugler, 1901. Collection of the Carbondale Historical Society and Museum, Inc.*

By  
**S. Robert Powell, Ph.D.**

October 9, 2014

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Carbondale, PA 18407



**Jane Ball**, who married Philo Callender Gritman, was born February 18, 1833, and died February 24, 1909. Her father, William Ball, was the first engineer at the head of Plane No. 1 on the Gravity Railroad. Jane Ball Gritman was an extraordinary archivist with a strong passion for the history of Carbondale. The Gritman collection at the Carbondale Historical Society and Museum is an important reference resource on the history of Carbondale in the nineteenth century.

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In 1837, **Thomas Dickson** was hired by George A. Whiting, who was in charge of the horses and mules for the D&H, to drive the very large mule that was harnessed at the sweep which was used for lifting coal out of the mine at Carbondale. On May 13, 1869, Thomas Dickson, a "Great Scot," was elected the fifth president of the Delaware and Hudson Canal Company, and served the company in that capacity, brilliantly and with great style, until his death on July 31, 1884.

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D. & H. C. Co. Gravity Railroad: 1859 Configuration

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2014

Delaware and Hudson Canal Company  
Gravity Railroad: 1859 Configuration



*MACHINE SHOPS, (CARBONDALE, DEL. & HUDSON CANAL CO., detail of 1860 photograph by Johnson (Scranton, PA). The original print of this photograph is in the archives of the Wayne County Historical Society, Homestead, PA.*

By

**S. Robert Powell, Ph.D.**

October 9, 2014

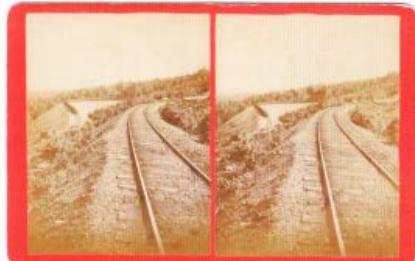
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Carbondale, PA 18407

D. & H. C. Co. Gravity Railroad: 1868 Configuration

Vol.  
04  
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ROM  
2014

Delaware and Hudson Canal Company  
Gravity Railroad: 1868 Configuration



*A Ride over the Del. & Hud. Gravity Railroad into the Coal Region, Photographical and  
Published by L. Hensel, Port Jervis, N. Y. No. 1120 "View of Shepard's [sic] Creek."  
Photograph in the collection of the Carbondale Historical Society and Museum, Inc.*

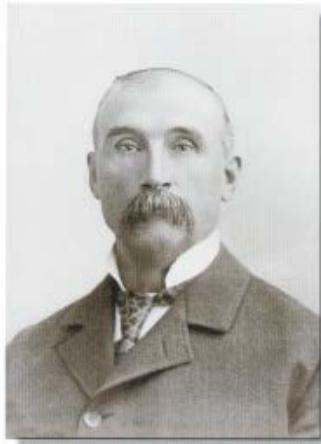
By

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Carbondale, PA 18407



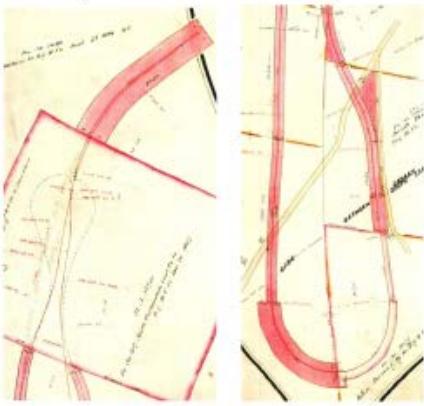
Under the supervision of **William J. McMullen**, Honesdale Branch trainmaster, the South Canaan Loop was installed, and the gauge on the entire rail line from Carbondale to Honesdale was changed in record time from Gravity to standard gauge. In February 1900, he was returning from a tour of inspection over the Branch on engine No. 53, and at Panther Bluff got off to throw a switch and, in crossing the track in front of the moving engine, the tender struck and killed him.

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D. & H. C. Co. Gravity Railroad: 1899 Configuration

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Delaware and Hudson Canal Company  
Gravity Railroad: 1899 Configuration



Switchback at Shepherd's Creek  
1901 D&H Map, collection Carbondale D&H Transportation Museum

By

S. Robert Powell, Ph.D.

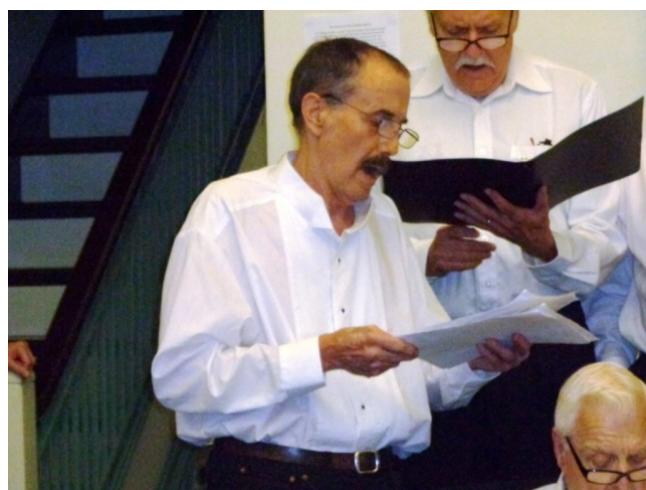
October 9, 2014

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

On December 10, 2014, Brian Lockman, President and CEO of the Pennsylvania Cable Network (PCN) interviewed Dr. S. Robert Powell about those new volumes that were published on October 9, 2014. That one-hour interview was broadcast on PCN on Sunday, January 17, 2015, at 7 P.M.

From October 26 to 29, 2015, the Historical Society hosted a visit to Carbondale of Cor Dathlu Cwmtawe. On Wednesday, October 27, the Chamber of Commerce hosted a reception for the Welsh choir. During that reception, Classic Voices, a Carbondale a cappella group, sang *Calon Lan*, in Welsh, for these choristers from Wales. Their performance of that well known Welsh song won high critical acclaim from the members of Cor Dathlu Cwmtawe. A photograph of Classic

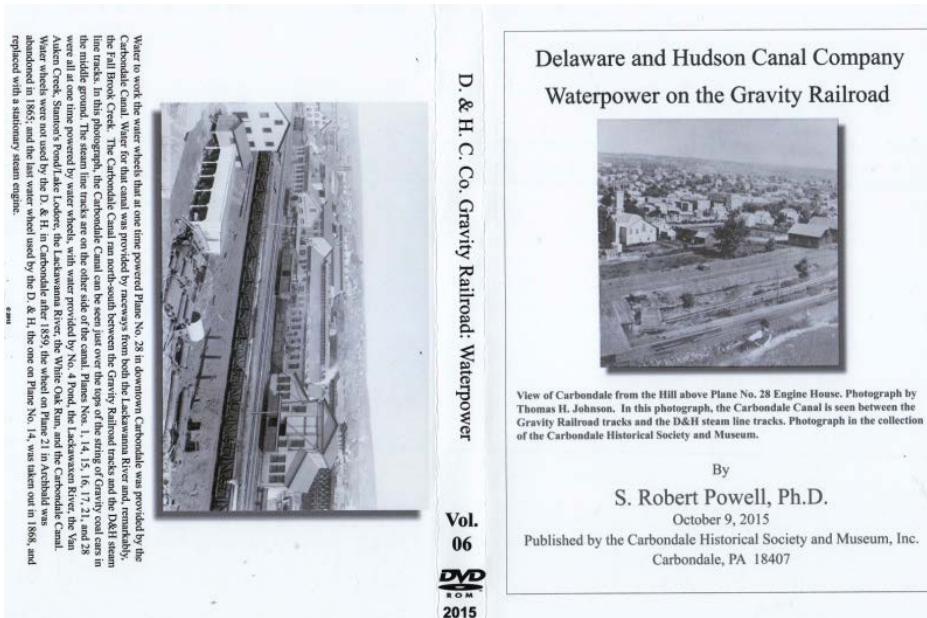
Voices singing *Calon Lan* is shown below. At the far left in this photograph, we see Robert (who is not much of a singer), who is not only making his American debut as a singer, but also singing in Welsh.



Robert wrote a detailed account of the October 2015 American tour by the Cor Dathlu Cwmtawé. That account, which was published in *Ninnau* (January–February 2016, p. 13), was described by Selwyn Morris and Lyn Thomas, members of the choir, as "brilliant."

During the Fall 2015/Winter 2016, The Delaware and Hudson Transportation Heritage Council created a documentary on the Delaware and Hudson Canal Company's Gravity Railroad. Three Gravity Railroad historians (Jane Varcoe, Cliff Robinson, Jr., and S. Robert Powell) were interviewed for this important documentary, which can be seen on line at dhthc.org. The documentary was produced by Bollinger & Rutter Video Products, Tyler Hill, PA.

On October 9, 2015, the 186<sup>th</sup> anniversary of the opening of the D&H Gravity Railroad from Carbondale to Honesdale, Volumes VI-X, in the 24-volume series that Robert is now writing on the history of the Delaware and Hudson Canal Company were published, in an electronic format, by the Carbondale Historical Society and Museum. The publication ceremony took place in the Main Street Gallery in the Chamber of Commerce building in Carbondale. Following the ceremony, a Champagne reception was hosted by the Chamber of Commerce and the Historical Society. Here are the dust jackets for those five DVDs:



The Delaware and Hudson Canal Company could not have built the Gravity Railroad from Carbondale to Honesdale or any of its other rail lines in the nineteenth century, or its Canal from Honesdale to the Hudson River without the help of horses, mules, and oxen. Similarly, the D&H could not have mined or marketed anthracite coal in the nineteenth century without the help of thousands of horses and mules. In the daily operations of the inclined planes and levels on the Gravity Railroad, horses were used from 1829 to 1859. After 1859 they were used on the Gravity Railroad only at the foot of Planes Nos. 1 and 13. In the daily operations of the Canal, horses and mules were used from 1829 to the closing of the canal at the end of the nineteenth century until well into the twentieth century. In the earliest mining operations in the second decade of the nineteenth century until well into the twentieth century, in the photo of the D&H Carbondale yard shown here, we see two D&H horses, the one at work moving a flat car loaded with lumber, the other at rest.

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## D. & H. C. Co. Gravity Railroad: Horses and Mules

Vol. 07  
2015



### Delaware and Hudson Canal Company Working Horses and Mules on the Gravity Railroad



*Mules for the Coal Mines.* Post card in the collection of the Carbondale Historical Society and Museum and the Carbondale D&H Transportation Museum

By

S. Robert Powell, Ph.D.

October 9, 2015

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

The D. & H. Gravity Passenger and Freight Depot in Honesdale was a deluxe building, with passenger arrivals and departures on the second floor. The 3-car Gravity passenger train seen here would be pulled by a working horse over the bridge on the canal to the foot of Plane No. 13, and then pulled to the head of the plane by a wire-rope cable, and from there sent on to Carbondale. Freight handling took place at street level, where customers in market wagons, pulled by working horses, consigned and received freight. Plane No. 12 ½ crossed Plane No. 13 on the lower of the two bridges over the canal; the Old Cherry Ridge Road crossed the plane on the second bridge. This remarkable photo is from the collection of Jim and Marlene Cliff, Hawley, PA. Jim Cliff's paternal grandfather, William R. Cliff, worked for the D&H. Mr. and Mrs. William R. Cliff lived at Kreams, PA (below Hawley's dam). Special thanks to Harry J. Loftis, White Mills, PA, who made this and several other remarkable photos in the Cliff Collection available to us on October 23, 2014.

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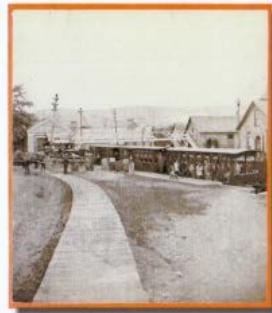


## D. & H. C. Co. Gravity Railroad: Passenger Service

Vol. 08  
2015



### Delaware and Hudson Canal Company Passenger Service on the Gravity Railroad



Hensel No. 1190: *Del. & Hud. Gravity Road Depot.* Stereoscopic Views of CARBONDALE Pa., Photographed and Published by L. HENSEL, Port Jervis, N. Y.

By

S. Robert Powell, Ph.D.

October 9, 2015

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

Farview Park, on the summit of the Moose Mountain between Carbondale and Waymart, on the line of the D&H Gravity Railroad, opened in the fall of 1885. Thirty of the more than 600 acres in the park were improved as a picnic ground. There were more than 20 buildings in the park, the largest of which was a dancing pavilion, 175 feet long and 35 feet wide, and built with four wings. Also on the grounds were swings, rustic seats, tennis courts, football and baseball grounds, shaded walks, open vias, and excellent spring water. There were also two observation towers, the higher of which, at 2,45 feet above the level of the sea, more than 20 villages and cities and 7 lakes could be seen. Farview Park was surely the most popular destination for rail excursions in northeastern Pennsylvania from 1885 to the early years of the 20th century. On a record day in September, 1898, nearly 15,000 passengers were transported by the celebrated D&H Gravity Railroad to Farview Park. Shown here is a group of D&H employees on a picnic outing at Farview Park.

As reproduced  
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D. & H. C. Co. Gravity Railroad: Farview Park

Vol.  
09  
DVD  
2015

Delaware and Hudson Canal Company  
Gravity Railroad: Farview Park



*Coach Rides at Farview Park. Photograph in the collection of the Carbondale Historical Society.*

By

S. Robert Powell, Ph.D.

October 9, 2015

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

This D&H Office Building stands on the NW corner of the intersection of Wurtz Avenue and Depot Street in Providence, Hermon, the D&H managed its interests and operations in the Lackawanna and Wyoming valleys, beginning 1871-2, when the building was erected. The Valley Road, which opened on July 4, 1871, was surely managed from this office, as were, it seems probable, the anthracite mining operations of the D&H in Scranton and Wilkes-Barre. The date when the D&H moved its offices from this building is not yet known, but we do know from the 1888 map of Scranton, that the building no longer served as a D&H office, when that map was drawn. When this office was closed the offices that were housed there were merged, as seems probable, with those in the Carbondale D&H office building. The three "Record of D&H" bound volumes in the archives of the Carbondale D. & H. Transportation Museum, which are imprinted on the base of the gneiss D. & H. C. Co. / Providence, PA, were at one time housed in this splendid high style Victorian brick office building.

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D. & H. C. Co. Gravity Railroad: Valley Road

Vol.  
10  
DVD  
2015

Delaware and Hudson Canal Company  
The Steam Line From Carbondale to Scranton  
(the Valley Road)



*Detail of the *Atlas of Scranton and Borough of Danmore* (published by L. J. Richards & Co., Philadelphia, PA, 1888), in the Depot and Dean Streets area, showing the former D. & H. C. Co. office building and the D. & H. C. Co. passenger and freight stations, Providence, PA*

By

S. Robert Powell, Ph.D.

October 9, 2015

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

On December 10, 2015, Brian Lockman, President and CEO of the Pennsylvania Cable Network (PCN) interviewed Dr. S. Robert Powell about those new volumes (Volumes VI-X) that were published on October 9, 2015. That one-hour interview was broadcast on PCN on Sunday, January 17, 2016 at 7 P.M. A copy of that interview is in Robert's archives.

The theatre group that Robert has belonged to many years, the Dearly Departed Players, was presented with an award by *Happenings Magazine* at a luncheon at the Hilton in Scranton on November 24, 2015. In the photograph shown below, taken by Wendy Belaski, we see Robert, in formal attire, at that presentation ceremony.



In the period June 18-July 3, 2017, Robert traveled to Wales with the Voices of the Valley Choir from Mid-Valley High School.

“. . . fond memories of this concert tour will be treasured forever by the Voices of the Valley Choir and friends.”



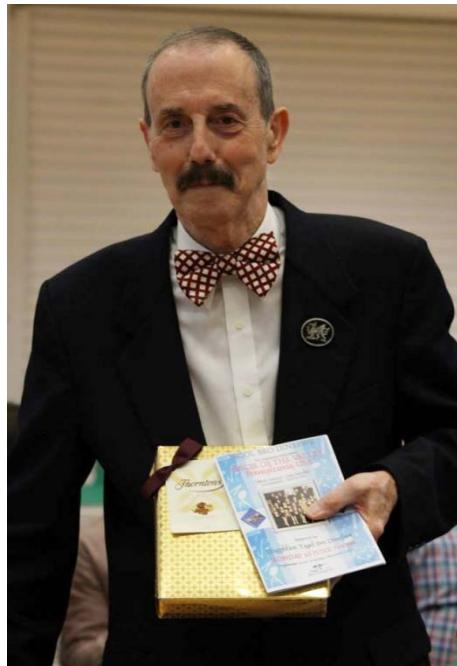
Robert and Jerry Williams at Ynyscedwyn Ironworks at Ystradgynlais on June 23, 2017



Robert in a reflective moment at Laugharne Castle on June 24, 2017.



Robert at the top of a turret at Kidwelly Castle on June 25, 2017.



Robert won one of the door prizes (a box of candy) at the Llandielo concert at Ysgol Bro Dinefwr on June 26, 2007.



Robert takes a ride on the merry-go-round at Cardiff harbor on June 27, 2017



Robert and a group of the members of the Voice of the Valley at Raglan Castle on July 2, 2017.

Here is the article that Robert wrote about the trip that was published in the September-October 2017 issue, p. 8, of *Ninnau*:

## **Triumphant Tour of South Wales by American Youth Choir**

By Dr. Silas R. Powell

Five brilliantly-conceived and flawlessly executed concerts by Voices of the Valley, under the direction of Gina Pascolini and with Marty Ort as accompanist, were performed during the choir's 5-concert tour of South Wales, June 18-July 3, 2017. Full houses and enthusiastic standing ovations were the order of the day at all of those concerts.

In the repertory of Voices of the Valley were six songs that the American students sang in Welsh, to the delight and enthusiastic approval of the audiences at all of the concerts: *Hen Wlad Fy Nhadau*, *Suo Gan*, *Calon Lan*, *Cwm Rhondda*, *Rachie*, and *Amazing Grace*.

The first of these five concerts took place on June 23 in Saint Cynog's Church, Ystradgynlais. Performances by the Cor Dathlu Cwmtawe and by students from Ysgol Gyfun Ystalyfera were an integral part of this concert.

Four concerts were then performed by the Voices of the Valley at Welsh comprehensive schools: on June 26 at Ysgol Bro Dinefwr, Llandeilo (performances by Ysgol Bro Dinefwr students, under the direction of Conway Morgan, were featured on the program); on June 28 at Ysgol Bae Baglan, Port Talbot (performances by students at Ysgol Bae Baglan and by the Cymric Male Voice Choir were an integral part of this musical evening); on June 30 at Morriston Comprehensive School, Morriston (performances by the Morriston RFC Male Choir, Morriston Comprehensive Singers, and Cwmrhedyceirw Primary School Choir were featured during the evening).

The last of the five concerts performed by these students from America on their international odyssey of music and song was performed on July 1 as part of the Noel Davies MBE Cyngerdd Goffa, Pontarddulais Comprehensive Community School. Soul stirring and inspired performances by the Cor Meibion Pontarddulais Male Choir and by the Voices of the Valley Choir made this evening of music and fellowship unforgettable.

In addition to those five concerts, the American choir was honored to be asked to participate in the program of dedication at the refurbished Daniel Protheroe Memorial Park at Ystradgynlais on July 1, 2017. At the opening of the ceremonies, the Voices of the Valley sang *The Star-Spangled Banner*. That performance of the American national anthem was followed by a performance, in Welsh, by the Voices of the Valley, of two verses of Daniel Protheroe's hymn *Cwmgiedd*, a performance which many people have described as "a brilliant rendering" of that hymn.

Daniel Protheroe, who was born at Cwmgiedd near Ystradgynlais, Brecknockshire in 1866, emigrated to America as a young man and gained great fame as a conductor, educator, and composer, renowned for over 1,500 compositions. He died in 1934, and his earthly remains were interred in Forest Hills Cemetery, Dunmore, Pennsylvania, which is only a few miles from Archbald, Pennsylvania, where is located the home school of the Voices of the Valley choir.

During their two-week tour, the Voices of the Valley choir also sang selections from their repertory at many non-concert hall locations. In England: at Stonehenge and at Saint Paul's Cathedral; in Wales: at Tintern Abbey, Oxwich Bay Hotel, Danyr Ogof Caves, Craig-y-Nos Castle, National Botanical Gardens, St. David's Cathedral, the Welsh Senedd at Cardiff, Ystradgynlais Conservative Club, Blanco Hotel in Port Talbot, and Raglan Castle.

Given the fact that those sites were, in all cases, perfect venues for the musical selections chosen by Ms. Pascolini and performed at those sites by the choir, the performances were unforgettable, not only for the choir and friends traveling with the choir on their concert tour, but also for visitors to those sites whose good fortune it was to present as the choir sang.

At Tintern Abbey, at Saint Paul's Cathedral, and at St. David's Cathedral, for example, the choir's performance of "Amazing Grace" was enriched by the centuries-old ecclesiastical context in which that hymn was performed at those sites.

The same is true of the performance by Voices of the Valley of John Rutter's "All Things Bright and Beautiful" at the National Botanical Gardens of Wales. There, in the Great Glasshouse, before a backdrop of the breathtaking natural beauty of Wales, and accompanied by the benign and innocent songs of birds, the tragedy at Aberfan, on October 21, 1966, when 116 children and 28 adults were killed in the catastrophic collapse of a colliery spoil tip there, was rendered heart breaking and unforgettably poignant by the flawless performance by the choir of Rutter's wonderful song.

Selwyn Morris, a member of the Cor Dathlu Cwmtawe from Ystradgynlais, who served as the Welsh language coach for the American students, noted: "These students are absolutely amazing. They sing in Welsh as if it were their native language."

The tour director for this concert tour by Voices of the Valley was Ted Frutchey who, over the years, has organized many concert tours to America by choirs from Wales. The highly successful visit to America in October 2015 by the Cor Dathlu Cwmtawe, for example, was organized by Ted Frutchey, and during that choir's American tour the choir at Valley View High School performed on the same program with them at a concert in Carbondale. Following that concert, at the request of the Cor Dathlu Cwmtawe and Her Majesty's Representative to the County of Powys, the Voices of the Valley on this concert tour of Wales were invited to perform in Wales. In speaking of the members of the Voices of the Valley choir, Ted Frutchey noted: "This is America at its best."

During their time in Wales, the students visited many important historic sites in Wales, including Tintern Abbey, Craig Y Nos Castle, Laugharne Castle, the Dylan Thomas Boathouse at Tenby, Catell Cydweli, St. David's Cathedral, St. Fagan's National Museum of History, Big Pit National Coal Museum, Raglan Castle, Carreg Cennen Castle & Farm, Cardiff Castle and City of Cardiff, and Castell Caerdydd.

Seeing first-hand the natural beauty of South Wales also an important part of the trip for the students, who visited Rhossili Bay and village and the Gower peninsula, Pen Pyrod, Mumbles Pier, Saint Govan's Head at Boshereton, Oxwich Bay, Danyr Ogof Caves, and Llandeilo.

The choir and friends spent an enchanting day in Ystradgynlais on July 1. The day began with a 40-minute concert by the choir on the terrace at the Conservative Club, followed by an afternoon at the Buskagynlais in town and a bountiful Thanksgiving-style dinner at the Yniscedwyn Arms, to be followed by the re-dedication of the Daniel Protheroe Monument there.

Parents and friends of the Voices of the Valley took advantage of the opportunity, during their time in Wales, to make in-depth visits to historic sites not on the choir's itinerary. Those visits included a guided tour by John Owens, given to Jerry Williams and S. Robert Powell, of the primary Ystradgynlais historic sites, including the Yniscedwyn Ironworks, the Gorsedd Stones park that commemorates the 1954 National Eisteddfod at Ystradgynlais, the Miners' Memorial/Diamond Park (the site of the former Diamond Colliery), and a visit to Cwmgiedd and the pear tree and historical plaque there in memory of the inhabitants of the Czech mining community of Lidice, all of whom were killed, and the town erased from the map, in 1943, by the Nazis. That vicious act of hatred is the subject of the World War II film "The Silent Village," which was filmed at Cwmgiedd.

In addition, Selwyn Morris of Ystradgynlais hosted and conducted a day-long historical and genealogical tour for S. Robert Powell, to the Head of The Valleys and to the Blenavon National Historic Site there. Jerry Williams, the publicity chairman and media director for the Voices of the Valley tour, and Dr. Powell, both representing the Carbondale Historical Society in Pennsylvania, are presently focused on establishing a active working relationship with the Ystradgynlais District Heritage and Language Society, and other historical and genealogical societies in Wales. The stimulus for their research interest in this Carbondale/Wales initiative is the fact that ninety Welsh families were recruited in Wales, in 1830-1832, and brought to the Lackawanna Valley in Pennsylvania in order to teach the miners in the anthracite region of Pennsylvania how to conduct deep underground shaft mining.

The members of the Voices of the Valley 2017 Welsh Tour were: Beatrice Chindemi, Sarah Ferraro, Mia Tomassoni, Kaedy Masters, Cas Dumas, Joe Morisco, Justin Thomas, Kevin Mellow, Kara Hirjak, Cammie Gillar, Emily Williams, Julia Romanovich, Ryleah Ruffner, Noah Reed, Chris Benitez, Paulie Vanvestraut, Brianna Pallo, Julie Krupka, Carleigh Gillar, Deanna Soulsby, Lorna Yushinsky, Noah McKane, Noah Benjamin, Teresa Dumas, Giavanna Mercaltilli, Smantha Humen, Janet Zhao, Eric Lee, Josh Rudolph, and Kasidy Leggin.

This concert tour of South Wales by the Voices of the Valley choir was an intellectual, choral, and cultural achievement of the highest order, and the members of the choir and friends will never forget it. As the tour came to an end, Gina Pascolini noted: “The power of music knows no boundaries—not in miles, age or language. We are most humbled, blessed and thankful to have been able to make this trip to Wales and to have made friends for a lifetime.”

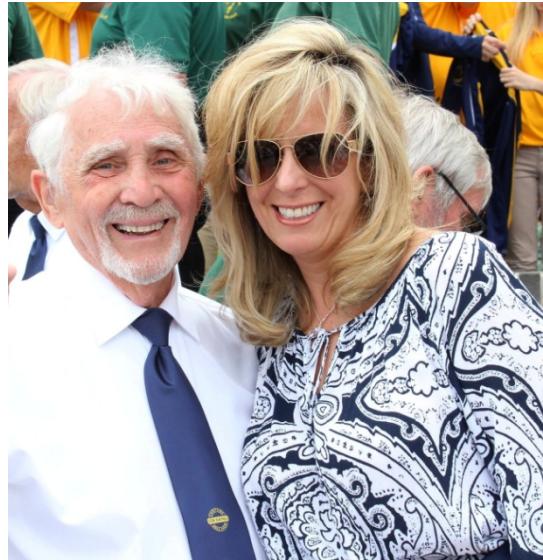
Many members of the tour will surely one day return to Wales. In a heart-warming and unforgettable expression of friendship, members of the Ystradgynlais Conservative Club, at the “afterglow” reception there following the choir’s final concert in Wales, sang, as a farewell gift to the American choir, “We’ll Keep a Welcome”. That moment and fond memories of this concert tour will be treasured forever by the Voices of the Valley Choir and friends.

\* \* \* \* \*

Published with the article in *Ninnau* were the following three photographs:



The Voices of the Valley are shown here singing "Ain't No Grave" by Paul Caldwell and Sean Ivory at the Noel Davies MBE Cyngerdd Goffa on July 1 at Pontarddulais.

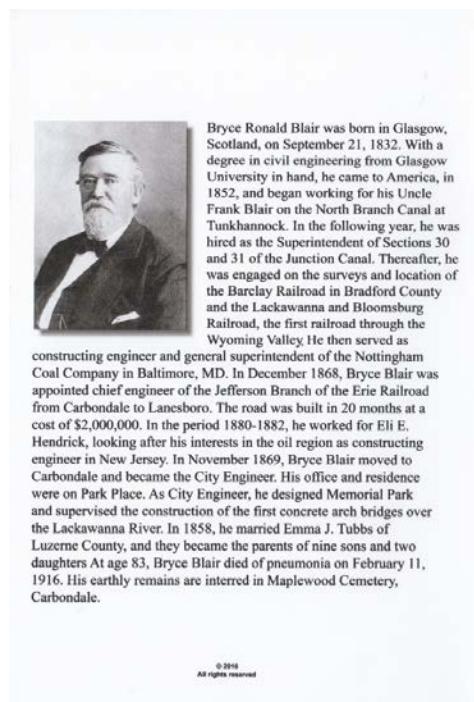


Gina Pascolini is the Choral Director of the Voices of the Valley Choir. She is shown here with Selwyn Morris, Ystradgynlais, a member of the Cor Dathlu Cwmtawe and the Welsh language coach for the students in the Voices of the Valley Choir.



The Central Memorial in the refurbished Daniel Protheroe Memorial Park, Ystradgynlais, was unveiled on July 1 by Mrs. Hannah Protheroe Griffiths, great niece of Daniel Protheroe. During those ceremonies, Ted Frutchey, on behalf of the Voices of the Valley, presented Mrs. Griffiths with a framed photograph of the tombstone of Daniel Protheroe in Forest Hills Cemetery, Dunmore, Pennsylvania.

On October 9, 2016, Volumes XI through Volumes XV in Robert's series on the Delaware and Hudson Canal Company were published. Here are the dust jackets for those five volumes:



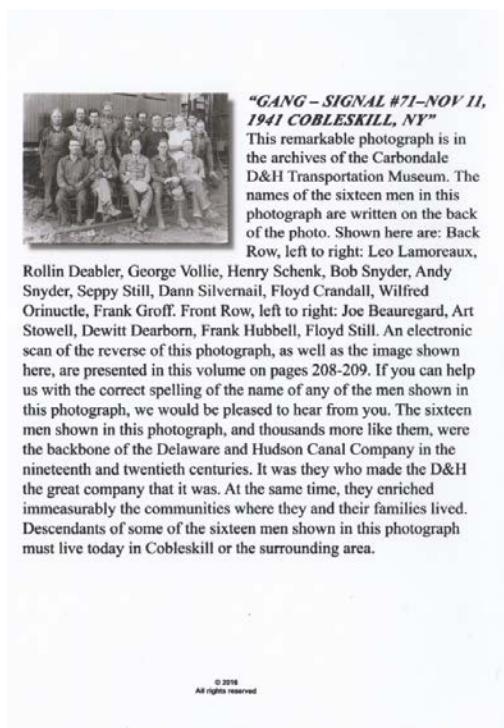
D. & H. C. Co. Gravity Railroad: Jefferson Branch  
Vol. 11  
DVD  
2016

Delaware and Hudson Canal Company  
The Jefferson Branch of the Erie Railroad  
(Carbondale to Lanesboro)



*D&H Turntable, Lanesboro, PA.* Photo in the collection of the Carbondale D&H Transportation Museum. Engine No. 3, at the left, has just been turned on the turntable, and is heading south to assume its position at the head of the passenger cars, on the right, for the trip to Carbondale.

By  
S. Robert Powell, Ph.D.  
October 9, 2016  
Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



D. & H. C. Co. Gravity Railroad: Reaching Out  
Vol. 12  
DVD  
2016

Delaware and Hudson Canal Company  
Reaching Out: D&H Steam Lines beyond  
the Lackawanna Valley



*Black Diamond Bridge\* (Fish's Island Bridge) on the former Wilkes-Barre Connecting Railroad*, photograph by Frank Dutton, April 29, 2015. This bridge, now part of Norfolk Southern's Sunbury Line (at milepost 690) crosses the Susquehanna River, from Kirby Park, Kingston (on the right) to South Wilkes-Barre, PA. \*See *Black Diamond* Notes on pp. 625 - 631.

By  
S. Robert Powell, Ph.D.  
October 9, 2016  
Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



Coe F. Young, of Scottish extraction, was born near Mount Hope, Orange County, NY, May 15, 1824. As a young boy, he procured work on the Delaware and Hudson Canal as a mule driver. It was not long before he had a boat of his own and his ability attracted the attention of the officials of the D&H. Soon thereafter he was placed at the head of the freight department of the Canal company. He married, January 17, 1849, Miss Mary A., daughter of Peter Cornell, of Rondout, New York. In the spring of 1852 he bought

of Major Cornell a half-interest in his canal freight line between New York and Honesdale. In 1857 he became the sole owner of that freight line, and moved to Honesdale, where for the following seven years he operated successfully his D&H Canal freight line. On January 1, 1864, Coe F. Young entered the service of the D&H as superintendent of the Canal Department. On the death of Russel F. Lord, general superintendent of the canal, on July 7, 1867, Coe F. Young succeeded to that position. On May 13, 1869, he was named D&H General Superintendent (title later changed to General Manager). On September 7, 1875, Coe F. Young became a director of the Albany and Susquehanna Railroad. On September 4, 1877, he was elected (as successor to Joseph H. Ramsey) President of the A&S, and served as president of the A&S up to September 17, 1889. He served as General Manager of the D&H Canal until the death of Thomas Dickson, in July, 1884. On October 24, 1884, he was elected Vice-President and General Manager of the D&H company. In July 1885, he resigned, and his son, Horace G. Young, was, on September 30, 1885, appointed to fill the vacancy. Coe F. Young died of pneumonia at Thomasville, Ga., where he had gone in search of health, on March 23, 1889. D&H Engine No. 12 was named *Coe F. Young*.

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## D. & H. C. Co. Gravity Railroad: Troubled Times

Vol.  
13

DVD  
ROM  
2016

## Delaware and Hudson Canal Company Troubled Times - the 1870s



Section of Washburn Street Cemetery, Scranton, PA, wherein are interred the earthly remains of many of the 110 men and boys who were killed in the September 6, 1869 Avondale Mine Disaster, Plymouth Township, PA. Photo by the author on September 6, 2014.

By

S. Robert Powell, Ph.D.

October 9, 2016

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



*Russell D. Peters' Flower Garden,  
D&H Carbondale Yard, c. 1941-1948.*  
Russell D. Peters and his wife, nee Helen Vojick, lived at 93 Salem Avenue, Carbondale. Russell Peters worked as a switchman in the Carbondale D&H marshalling yard in the period 1941-1948. He also established and maintained a flower garden in the D&H Carbondale yard. One section of that flower garden

is shown here. The placement of this flower garden in the industrial context of a busy railroad yard is not only remarkable but also tells us a great deal about Russell D. Peters and his approach to living his life. This photograph and two others of Peters' flower garden in the Carbondale yard which are presented in this volume were produced from negatives of photographs that were taken by Carbondale photographer William J. Nally, 100 Gordon Avenue, Carbondale. Those negatives were donated to the Carbondale D&H Transportation Museum in 2015 by John J. Vojick, age 94, of 44 Belmont Street, Carbondale. (John J. Vojick is the brother-in-law of Russell D. Peters, who married Helen Vojick, who was a stenographer/vice president of the Carbondale First National Bank; John J. Vojick, who was born May 7, 1920, died on August 4, 2016). The technical expertise and assistance of Ken Atkinson (GRAFXPRESS DIGITAL STUDIOS, Scott Township, PA), who produced electronic copies of those negatives, has made it possible for us to present these three remarkable photographs in this volume.

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## D. & H. C. Co. Gravity Railroad: Carbondale Stations

Vol.  
14

DVD  
ROM  
2016

## Delaware and Hudson Canal Company Carbondale Stations, Freight Houses, and the Carbondale Yard



*D & H Round House, holding 57 Locomotives,  
Carbondale, Pa.* Post card in the collection of the  
Carbondale D. & H. Transportation Museum

By

S. Robert Powell, Ph.D.

October 9, 2016

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



**Leonor Fresnel Loree:** With 21 years of service with the Pennsylvania Railroad under his belt, and having served as president of the Baltimore and Ohio Railroad Company for over three years and a term as president of the Rock Island Company and with three degrees from Rutgers College to his name (BS, 1877; MS, 1880; Civil Engineering degree, 1896), Leonor Fresnel Loree, at age 48, became the eighth president of the D&H on April 10, 1907. He was a strong advocate of upgrading and improving every aspect of

the D&H transportation system. The modernization of D&H motive power was his passion—and he did so for the following 31 years (the Mallets, the Pacifics, the E-6 Consolidations, the rebuilding of more than 100 locomotives). At the same time, he focused on his own intellectual development. In 1917, Loree was awarded a Doctor of Law degree from Rutgers. The summa of his motive power commitment to the D&H were the four magnificent “experimentals”: in 1924, the Horatio Allen, No. 1400; in 1927, the John B. Jervis, No. 1401; in 1930, the James Archbald, No. 1402; and in 1933, the L. F. Loree, No. 1403. In the same year that No. 1403 made its debut, Loree was awarded a Doctor of Engineering from Rensselaer Polytechnic Institute. What an extraordinary man! L. F. Loree, a principal founder of The Newcomen Society of North America, a learned society promoting engineering, technology, and free enterprise. L. F. Loree, the P. T. Barnum of railroading in America in the early twentieth century, a giant of a man, whose vision guided the D&H from 1907 to May 16, 1938, when Joseph H. Nuell became the company’s ninth president. On September 6, 1940, L. F. Loree died at West Orange, NJ.

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D. & H. C. Co. Gravity Railroad: Locomotives

Vol.  
15

DVD  
ROM  
2016

### Delaware and Hudson Canal Company Locomotives and Roundhouses



“D&H No. 500, Passing through Carbondale, November 9, 1951.”  
No. 500 was built by ALCo in 1903. Photo by Bob Collins. Post card in the collection of the Carbondale Historical Society.

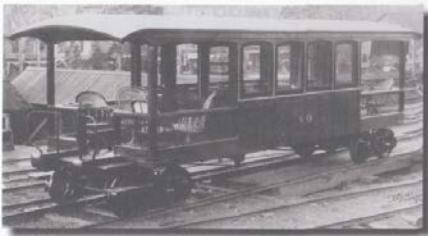
By

S. Robert Powell, Ph.D.

October 9, 2016

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

On October 9, 2017, Volumes XVI through Volumes XX in Robert’s series on the Delaware and Hudson Canal Company were published. Here are the dust jackets for those five volumes:



**D&H Officers’ Car No. 80.** Photograph by Bodie, Honesdale. This car was built in the Delaware and Hudson car shops at Carbondale in 1886 and was used exclusively on the Gravity Railroad as an Officers’ car. The other named Gravity Railroad passenger cars included *Comet*, *Eclipse*, *Monitor*, *Moosic*, *Passaic*, and *Wayne*.

D. & H. C. Co. Gravity Railroad: Rolling Stock

Vol.  
16

DVD  
ROM  
2017

### Delaware and Hudson Canal Company Rolling Stock: Freight and Passenger



“Two Standard Tandem Twin Hopper Bottom Gondolas of 85,000 Pounds Capacity and Eleven Men” Photograph in the collection of the Carbondale D&H Transportation Museum. Written on the reverse of this photograph is the following: “Francis Farley - First on left”.

By

S. Robert Powell, Ph.D.

October 9, 2017

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407

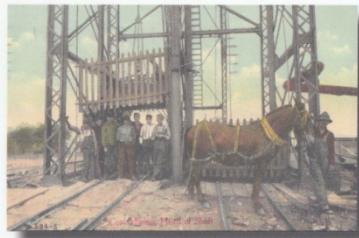


**Carbondale West Side Mine Fire.** Photograph stamped on reverse "CRAMER STUDIO / 19 N. MAIN STREET / CARBONDALE, PA." This photograph, signed "J M CRAMER," is a Kodachrome Enlargement (7 3/8" x 7 3/8") made by Kodak in October 1962. This photograph by John M. Cramer, who resided at 75 Laurel Street, Carbondale, is one of six color enlargements of photographs of the Carbondale Mine Fire by John M. Cramer that came to the Carbondale Historical Society from the estate of Frank and Kitty Kelly, Carbondale.

D. & H. C. Co. Gravity Railroad: Anthracite Mining

Vol.  
17  
**DVD**  
ROM  
2017

### Anthracite Mining in the Lackawanna Valley in the Nineteenth Century



*Coal Mining: Head of Shaft.* Post card in the collection of the Carbondale D&H Transportation Museum.

By

S. Robert Powell, Ph.D.

October 9, 2017

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



**Slate Pickers - Scranton, Pa.** Post card in the collection of the Carbondale D&H Transportation Museum. This is a generic post card. The same image was probably used, with a different title (e.g., *Slate Pickers - Pittston*) on post cards that were marketed in other communities in the anthracite region. Estimates of the number of breaker boys who worked in the anthracite coal fields of Pennsylvania vary widely, and official statistics are generally considered by historians to undercut the numbers significantly. In 1880, it is estimated that 20,000 breaker boys worked in the coal fields of Pennsylvania; in 1900, 18,000; in 1907, 24,000. The practice of employing children in coal breakers largely ended by 1920 because of the efforts of the National Child Labor Committee, sociologist and photographer Lewis Hine, and the National Consumers League, who educated the public about the practice and succeeded in passing child labor laws.

D. & H. C. Co. Gravity Railroad: Breakers

Vol.  
18  
**DVD**  
ROM  
2017

### Breakers



*Powderly Colliery, Carbondale, Pa.* Post card in the collection of the Carbondale D&H Transportation Museum.

By

S. Robert Powell, Ph.D.

October 9, 2017

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



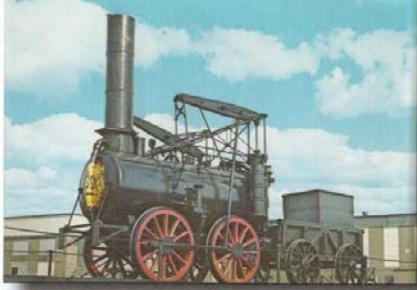
**The First Locomotive in America**, painting by Clyde Osmer DeLand, 1917, which is reproduced at the head of the 1918 calendar that was produced by the Continental Fire Insurance Company, New York. This calendar is in the holdings of the Wayne County Historical Society. In this painting, showing the trial run of the Stourbridge Lion on August 8, 1829, in Honesdale, there is a high degree of verisimilitude (even though the colors assigned to the engine itself are not historically correct).

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D. & H. C. Co. Gravity Railroad: *Stourbridge Lion*

Vol.  
19  
DVD  
ROM  
2017

The Stourbridge Lion



Fully working replica of the *Stourbridge Lion* that was made at the D&H shops at Colonie, NY and exhibited at the Century of Progress.

By

S. Robert Powell, Ph.D.

October 9, 2017

Published by the Carbondale Historical Society and Museum, Inc.  
Carbondale, PA 18407



**D&H Engine No. 7, E. A. Quintard, Parked at Carbondale's Union Station, 1899.** The original of this photograph is owned by Jim and Maureen Clift, Hawley, PA. Jim Clift is the grandson of William R. Clift, who worked for the D&H and who is seen in this photograph on the far right. *D&H Engine No. 7, E. A. Quintard*, was used on passenger runs, beginning in 1899, on the new D&H standard-gauge line between Carbondale and Honesdale, known as the Honesdale Branch of the D&H. Seen in this photograph, left to right, standing on the ground, are Joe Fox and Frank Farrell; in the cab, Guy Little, trainman, and Oscar Histed, engineman. John Bryden and William R. Clift are standing on the ground at the right.

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D. & H. C. Co. Gravity Railroad: Honesdale Branch

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The Honesdale Branch of the D&H



*D&H Engine No. 142, leaving the switchback and heading up the hill towards Farview and Honesdale.* Written on the back of this photograph is the following text: "The first steam train ever to run on the Honesdale Branch from Carbondale to Honesdale and return after the D&H Gravity was abandoned. It was a trial run with officials and crew *No Passengers*". Photo in the Clift collection (Jim and Maureen Clift), Hawley, PA. Jim's grandfather, William R. Clift, is seen, second from the left, in this photograph.

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Robert continued his appearances with the Dearly Departed Players during the annual Dunmore Cemetery Tour in the first two weeks of October.

In 2014, he portrayed Henry Silkman:



Robert is shown here with Billy Loney in the cemetery before the performances began:



In 2015, Robert portrayed Judge Robert W. Archbald in the Dunmore Cemetery Tour. The first two photographs were taken during rehearsals, which begin annually in July for the October tour.



The photograph given below was taken during a performance in October 2015. More than 500 persons attended this 2015 tour.



In 2016, Robert, speaking as himself, delivered “thank you” tributes during the tour to Jim Patterson and Nancy MacDonald, former members of the tour who had “retired” from active participation in the annual tours. The photo of Robert with a horse from the Dunmore Police force is a promotional photo that was taken in the weeks before the October tour.



In October 2017, Robert served as the master of ceremonies/introductory speaker for the Dunmore Cemetery Tour. Both of the 2017 photographs were taken by Drew Bubser. In the first photo, we see Robert, in the wings, waiting for the tour to begin.

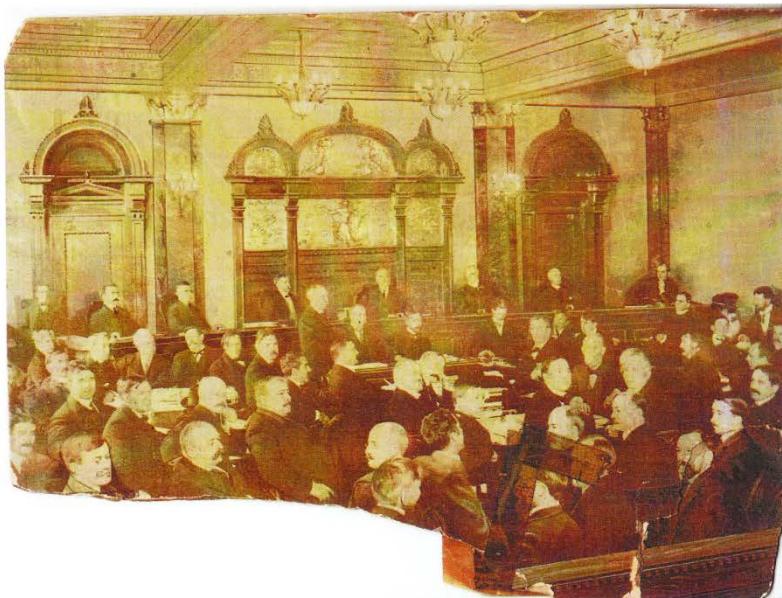


Robert is also seen, fourth from the right, in the curtain call photo by Drew Bubser that was taken at the conclusion of the 2017 tour:



On October 9, 2018, the final four volumes in Robert's D&H series, Volumes XXI-XXIX were published. Here are the front cover pages of those four volumes:

**Delaware and Hudson Canal Company**  
**The Anthracite Coal Strike of 1902**



*Anthracite Strike Commission, in Session, Courtroom No. 3, Lackawanna County Courthouse, Scranton, PA, November 17, 1902. Photograph by T. E. Dillon, Scranton, PA, 1902. Photograph formerly in the collection of Charles Melville, Jr., Carbondale, now in the holdings of the Carbondale D&H Transportation Museum. Seen in this photograph are three members of the Anthracite Strike Commission (Baer, Wilson, Spalding) as well as Clarence Darrow and John Mitchell.*

**S. Robert Powell, Ph.D.**

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## **Delaware and Hudson Canal Company**

### **The People: the D&H, the Community**



*Welsh Family Picnic: John and Mary (Howell) Powell (standing at the far end of the table) and Family. John Powell was born Abersychan, South Wales, August 1841, and came to America in 1864; Mary Howell was born in Pendaren, South Wales, in July 1847, and came to America in 1865. Photograph in the Russell Homestead Photo Archive, Carbondale, PA.*

By

**S. Robert Powell, Ph.D.**

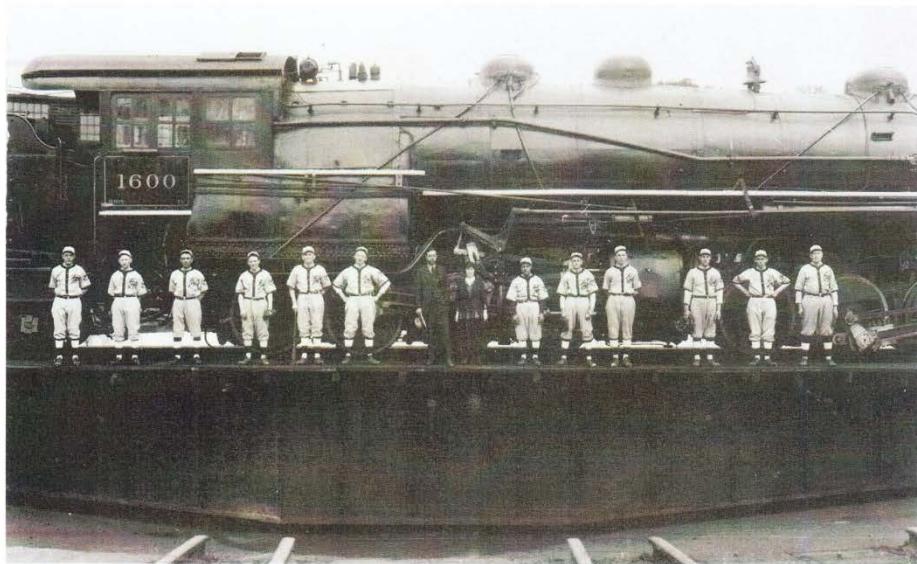
October 9, 2018

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## **Delaware and Hudson Canal Company**

### **The Quality of Life in the Lackawanna Valley in the Nineteenth Century**



*D. & H. Motive Power Shop Baseball Team, Carbondale, 1921.* Left to right: Jimmy Carden, Tom Boylan, Johnnie Leo, Mallica Mannion, Reuben Molinaro, unknown, Maurice Blockside (Painter foreman), Lena McGowan (secretary), Scanky Leo, Jimmy Tyson, Joe Beahan, Phil Farber, Jimmy Farrell, Pat Sharkey. Photograph in the holdings of the Carbondale D&H Transportation Museum, donated by Frank Truman, Carbondale.

By

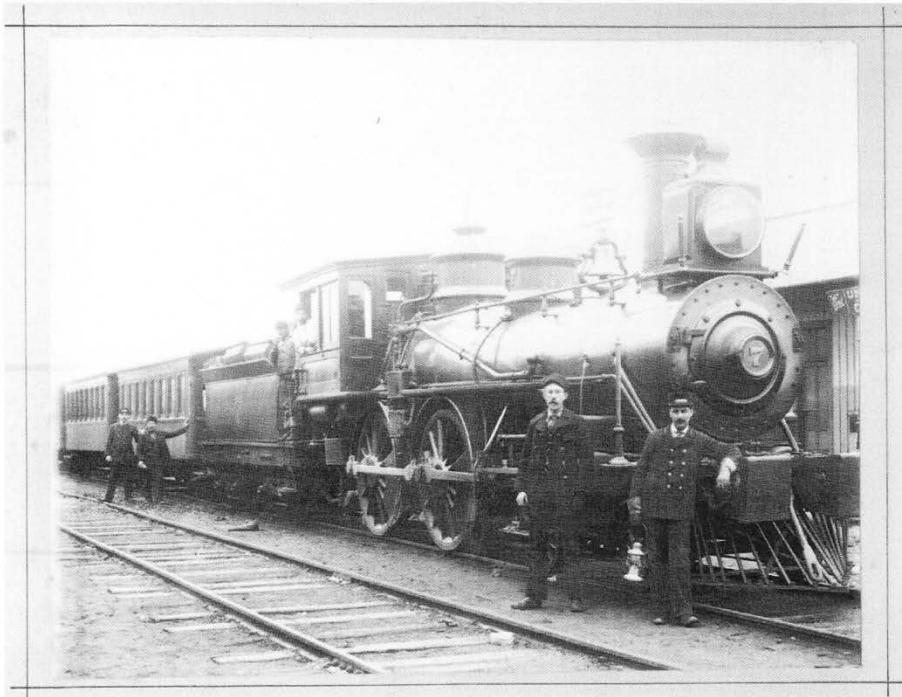
**S. Robert Powell, Ph.D.**

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**Delaware and Hudson Canal Company**  
**The Birth and First Maturity of Industrial America**



*D&H No. 7, E. A. Quintard, parked at Union Station, Carbondale.* Photo in the Jim and Maureen Clift collection, Keens, PA, that was presented to the Carbondale D&H Transportation Museum by Hank Loftus, on October 23, 2014. Jim Clift is the grandson of William R. Clift, who worked for the D&H, and who is seen in this photograph on the far right.

By

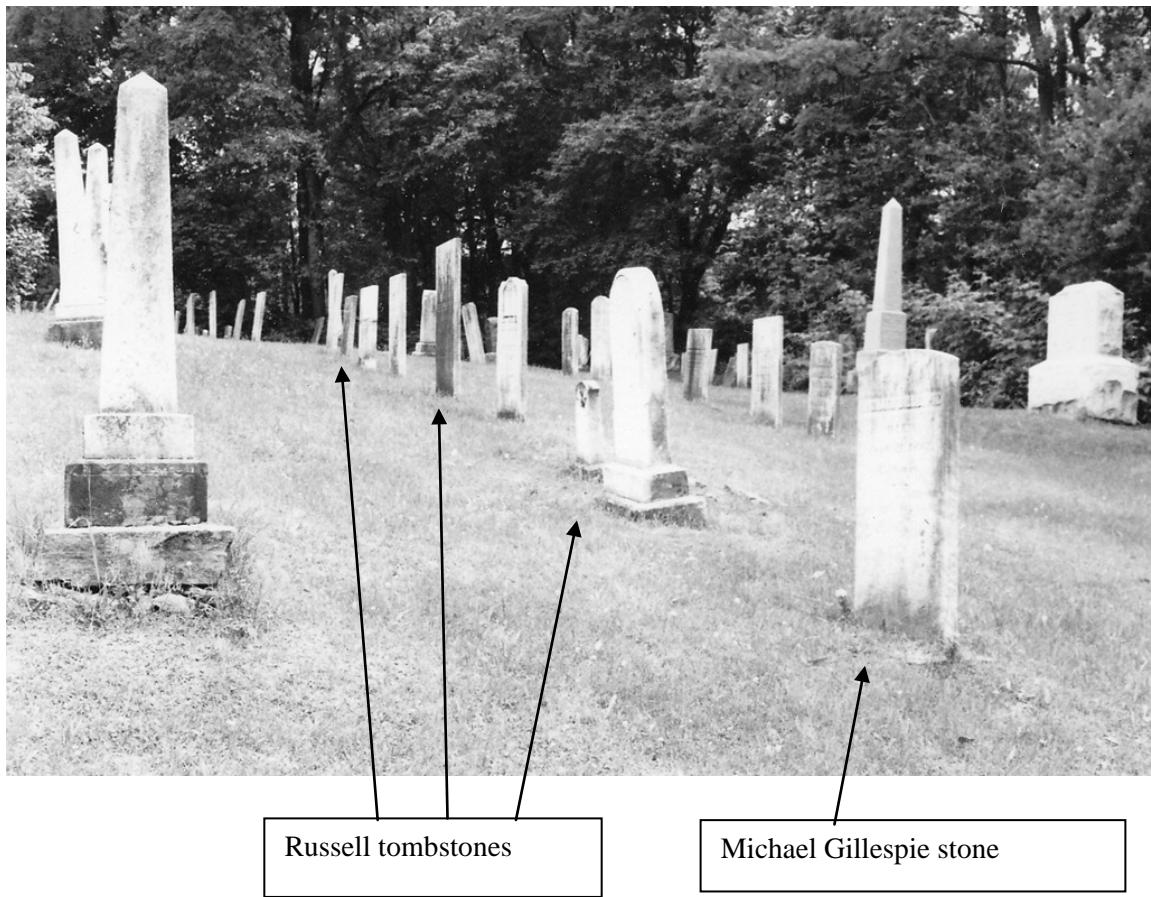
**S. Robert Powell, Ph.D.**

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When his labors on this celestial sphere shall have been completed, Dr. Powell's earthly remains will be interred at Elkdale, Susquehanna County, in the Elkdale Cemetery. Therein, in the Russell family plot, in a single row, are interred the remains of many of Robert's Scottish ancestors, including those of his celebrated ancestor, Michael Gillespie, who died a hundred years before Dr. Powell was born. Here is a photograph taken by Robert of the family stones in Elkdale Cemetery:

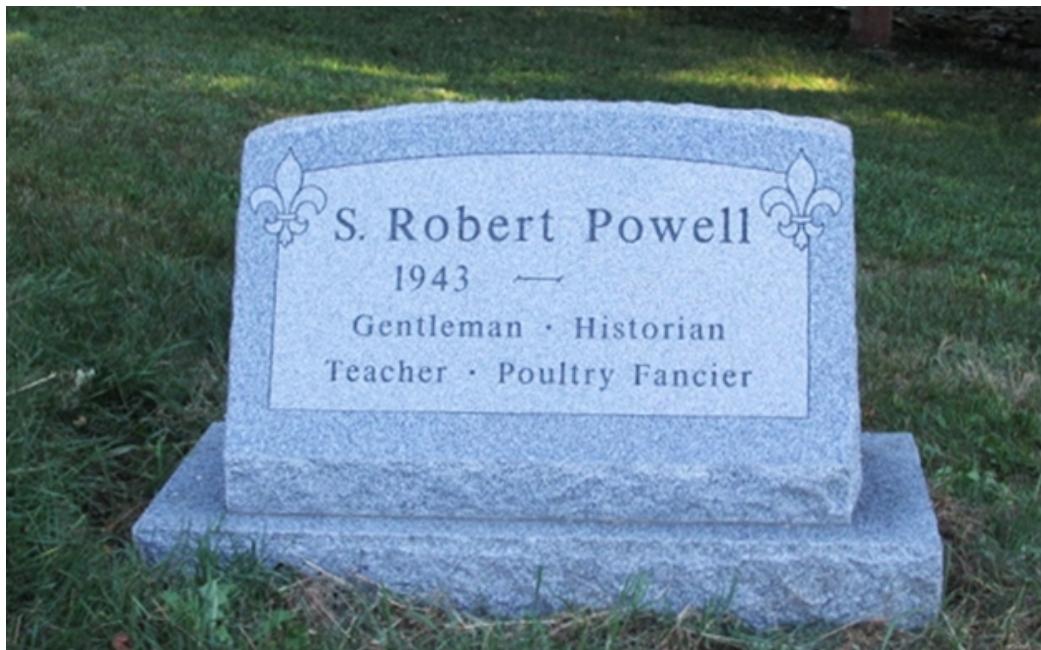


Here is another photograph of Elkdale Cemetery that was taken by Robert:



During the summer of 2015, Robert designed and had created the tombstone that will mark his burial site in Elkdale Cemetery. On August 5, 2015, Robert, together with a small group of friends, formally unveiled his tombstone in the Elkdale Cemetery. In the photograph shown below, Robert is unveiling his own tombstone.





The epitaph on Robert's tombstone reads:

**S. Robert Powell**  
**1943—0000**

**Gentleman, Historian,  
Teacher, Poultry Fancier**

Here is a photograph that was taken by Michele Bannon at these tombstone unveiling ceremonies. Seen in this photograph, starting from the left, are Pat Peltz, Robert, Mark Wilmot, Sandy Wilmot, Joe Scotchlas, Laure Carlo, and Tom Gordon



Life is good. On with the show.

\* \* \* \* \*